

FORM PTO-1390 (Modified)  
(REV 11-2000)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371

TFH 99.03A

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

09/914047

INTERNATIONAL APPLICATION NO.

PCT/US00/04357

INTERNATIONAL FILING DATE

22 February 2000 (22.02.00)

PRIORITY DATE CLAIMED

22 February 1999 (22.02.99)

TITLE OF INVENTION

FOLDABLE/COLLAPSIBLE STRUCTURE

APPLICANT(S) FOR DO/EO/US

Glen AXELROD and Walter LEE (for US Only)

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
  - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ has been communicated by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
  - a. ☒ is attached hereto.
  - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
  - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ have been communicated by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

## Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☒ Certificate of Mailing by Express Mail
23. ☒ Other items or information:

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR <div style="font-size: 1.5em; font-weight: bold;">09/914047</div>	INTERNATIONAL APPLICATION NO. <div style="font-weight: bold;">PCT/US00/04357</div>	ATTORNEY'S DOCKET NUMBER <div style="font-weight: bold;">TFH 99.03A</div>
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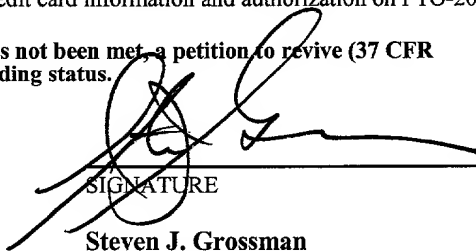
24. The following fees are submitted:				CALCULATIONS    PTO USE ONLY	
<b>BASIC NATIONAL FEE ( 37 CFR 1.492 (a) (1) - (5) ) :</b>					
<input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO .....					
<div style="float: right;"><b>\$1000.00</b></div>					
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO .....					
<div style="float: right;"><b>\$860.00</b></div>					
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO .....					
<div style="float: right;"><b>\$710.00</b></div>					
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) .....					
<div style="float: right;"><b>\$690.00</b></div>					
<input checked="" type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) .....					
<div style="float: right;"><b>\$100.00</b></div>					
<b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>				<b>\$100.00</b>	
Surcharge of <b>\$130.00</b> for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).				<b>\$0.00</b>	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	15 - 20 =	0	x \$18.00	<b>\$0.00</b>	
Independent claims	6 - 3 =	3	x \$80.00	<b>\$240.00</b>	
Multiple Dependent Claims (check if applicable). <input type="checkbox"/>				<b>\$0.00</b>	
<b>TOTAL OF ABOVE CALCULATIONS =</b>				<b>\$340.00</b>	
<input type="checkbox"/> Applicant claims small entity status. (See 37 CFR 1.27). The fees indicated above are reduced by 1/2.				<b>\$0.00</b>	
<b>SUBTOTAL =</b>				<b>\$340.00</b>	
Processing fee of <b>\$130.00</b> for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).				<b>\$0.00</b>	
<b>TOTAL NATIONAL FEE =</b>				<b>\$340.00</b>	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). <input type="checkbox"/>				<b>\$0.00</b>	
<b>TOTAL FEES ENCLOSED =</b>				<b>\$340.00</b>	
				Amount to be: refunded	\$
				charged	\$

- a. ☐ A check in the amount of \_\_\_\_\_ to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \_\_\_\_\_ to cover the above fees. A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. **08-1391** A duplicate copy of this sheet is enclosed.
- d. ☒ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Hayes, Soloway, Hennessey, Grossman & Hage, PC  
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 SIGNATURE  
 Steven J. Grossman  
 NAME  
 35,001  
 REGISTRATION NUMBER  
 August 22, 2001  
 DATE

**CERTIFICATE OF MAILING BY "EXPRESS MAIL" (37 CFR 1.10)**

Applicant(s): AXELROD ET AL

Docket No.

TFH 99.03A

Serial No.

09/914047

Filing Date

Examiner

Group Art Unit

Invention: FOLDABLE/COLLAPSIBLE STRUCTURE

I hereby certify that the following correspondence:

NATIONAL STAGE PATENT APPLICATION

*(Identify type of correspondence)*

is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 in an envelope addressed to: The Assistant Commissioner for Patents, Washington, D.C. 20231 on

August 22, 2001  
(Date)

CAROL MCCLELLAND

*(Typed or Printed Name of Person Mailing Correspondence)*

Carol McClelland

*(Signature of Person Mailing Correspondence)*

EL669521603US

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09/914047

JC03 Rec'd PCT/TO 22 AUG 2001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. Of: AXELROD et al

For: FOLDABLE/COLLAPSIBLE STRUCTURE

DOCKET: TFH 99.03A

The Honorable Commissioner of Patents & Trademarks  
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Dear Sir:

Applicants respectfully request that the following amendments be made to the above-identified application prior to examination.

IN THE CLAIMS:

1. (Amended) A collapsible/foldable structure comprising:

a top roof and a bottom platform defining a top and bottom of said structure,  
including a vertically disposed lower side section on said bottom platform;

front and rear collapsible walls each pivotally attached to said vertically  
disposed side section to provide for pivotable collapse of said front and rear walls;

said front wall having an opening for egress and ingress of an animal;

a pair of sidewalls each pivotally attached to said roof to facilitate inward  
collapse of said sidewalls when said sidewalls are pivoted toward said bottom platform,  
said sidewalls defined by an upper and middle section including said lower vertically  
disposed side section, wherein said upper and middle sections are pivotally attached to  
one another and said middle and lower section are pivotally attached to one another so

that said upper and middle sidewall sections can be pivoted inwardly towards said bottom platform;

and wherein said top roof further comprises two roof sections pivotally attached to one another so that said two roof sections can collapse downwardly along said pivotable attachment toward said bottom platform;

said sidewalls containing an outer and inner surface thereof, and wherein said upper and middle sidewalls are pivotally attached by a continuous outer surface of said sidewalls.

2. (Amended) The structure of claim 1 wherein said top roof, bottom platform, vertically disposed side section, pair of sidewalls and said front and rear walls are made from a thermally insulating polymeric material, polymeric foam material, expanded polystyrene foam, polyurethane foam, or structural foam material.

3. (Amended) The structure of claim 1 wherein said sidewalls pivotally attached to said roof, are pivotally attached substantially along a length of said sidewalls, and said pivotal attachment comprises a living hinge.

4. (Amended) The structure of claim 1 wherein said upper and middle sections pivotally attached to one another, are pivotally attached substantially along a length of said sidewalls, and said pivotal attachment comprises a living hinge.

5. (Amended) The structure of claim 1 wherein said middle and lower sections that are pivotally attached to one another are pivotally attached substantially along a length of said sidewalls, and said pivotal attachment comprises a living hinge.

6. (Amended) A collapsible/foldable structure comprising:

a top roof and a bottom platform defining a top and bottom of said structure including a vertically disposed lower side section on said bottom platform;

front and rear walls, said front wall having an opening for egress and ingress of an animal;

a pair of sidewalls each pivotally attached to said roof to facilitate inward collapse of said sidewalls when said sidewalls are pivoted toward said bottom platform, said sidewalls defined by an upper and middle section including said lower vertically disposed side section, wherein said upper and middle sections are pivotally attached to one another and said middle and lower sections are pivotally attached to one another so that said upper and middle sidewall sections can be pivoted inwardly towards said bottom platform;

wherein at least one of said pivotal attachments of said sidewalls is a living hinge substantially along the length of said sidewall.

7. (Amended) The structure of claim 6 wherein said front and rear walls are pivotally attached to said vertically disposed side section.

8. (Amended) A collapsible/foldable structure comprising:

a substantially planar top roof and a bottom platform defining a top and a bottom of said structure;

a pair of sidewalls each pivotally attached to said roof to facilitate inward collapse of said sidewalls when said sidewalls are pivoted toward said bottom platform, said sidewalls further containing an upper and lower section, wherein said upper and lower sections are pivotally attached to one another so that said upper and lower

sections can be pivoted inwardly towards said bottom platform, wherein at least one of said pivotal attachments is a living hinge substantially along the length of the sidewall.

9. (Amended) A foldable/collapsible structure for storing perishable goods comprising:

a horizontally disposed bottom panel and a vertically disposed side section, a top panel, a pair of side panels defined by upper and middle side sections including said vertically disposed side section;

first and second end panels;

said first end panel and second end panel hingedly attached to said vertically disposed side section to provide for pivotal collapse of said first and second end panel;

wherein said upper side section is hingedly connected to said top panel and said middle side section, said middle section is hingedly connected to said vertically disposed side section, wherein said side panels can be pivoted inwardly towards said bottom panel.

10. (Amended) The foldable/collapsible structure of claim 9 wherein at least one of said pivotal attachments of said side panels is a waterproof living hinge substantially along the length of said side panel.

11. (Amended) A collapsible/foldable structure comprising:

a top roof and a bottom platform defining a top and bottom of said structure, including a vertically disposed lower side section on said bottom platform;

front and rear collapsible walls each movably attached to said vertically disposed side section to provide for movement of said front and rear walls;

said front wall having an opening for egress and ingress of an animal;

a pair of sidewalls each pivotally attached to said roof to facilitate inward collapse of said sidewalls when said sidewalls are pivoted toward said bottom platform, said sidewalls further containing upper and middle section, wherein said upper and middle sections are pivotally attached to one another so that said upper and middle sidewall sections can be pivoted inwardly towards said bottom platform;

and wherein said top roof further comprises a roof section pivotally attached to the upper sidewall sections, so that said roof section can collapse downwardly along said pivotable attachment toward said bottom platform;

said sidewalls having an outer and an inner surface thereof, and the middle wall section being pivotally attached to the vertically disposed lower side section along an inner edge of the middle wall section to permit folding of said middle sidewall inwardly toward said base, the upper wall section being pivotally attached to said middle wall section at the outer edge thereof to permit said upper wall section to collapse into contact with the outer surface of said lower wall section, and said roof section being pivotally connected to said two upper sidewall sections along the inner edges thereof to permit said top to be collapsed into contact with the inner surface of said upper wall sections.

Please add new claims 12-15 as follows:

--12. A collapsible/foldable structure comprising:

a top roof and a bottom platform defining a top and bottom of said structure;



a pair of sidewalls each pivotally attached to said roof to facilitate inward collapse of said sidewalls when said sidewalls are pivoted toward said bottom platform, said sidewalls further containing upper and lower sections, wherein said upper and lower sections are pivotally attached to one another so that said upper and lower sections can be pivoted inwardly towards said bottom platform;

a first end panel comprising a door section and a second end panel;

a vertical side panel on said bottom panel, wherein said first and second end panel are hingedly connected to said vertical side panel and wherein said first and second end panel can be collapsed inwardly into said collapsible/foldable structure.

13. The collapsible/foldable structure of claim 12, wherein said door section comprises a screen door section.

14. The collapsible/foldable structure of claim 12 wherein said door section comprises a spring loaded pin release including pins which extend into said upper sidewall and said bottom platform.

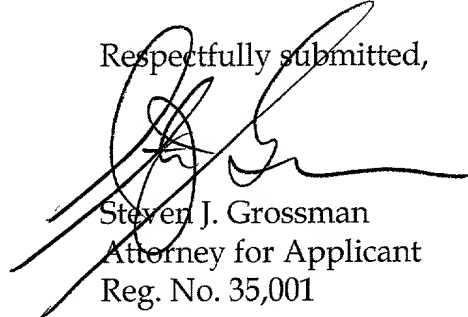
15. The collapsible structure of claim 12, wherein said door section includes a plurality of a spring loaded pin releases including pins which extend into said upper sidewall and said bottom platform.--

#### REMARKS

The claims have been revised to put them in form for United States practice, and new claims have been added to further scope the invention. No new matter is believed entered by any of the foregoing amendments.

The filing fees have been calculated based on the claims as amended. In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account No. 08-1391.

Respectfully submitted,



Steven J. Grossman  
Attorney for Applicant  
Reg. No. 35,001

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603-668-1400

518 Rec'd PCT/PTO 22 AUG 2001  
09/913947

CERTIFICATE OF EXPRESS MAILING

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Date of Deposit August 22, 2001

I hereby certify that this paper and the papers listed thereon are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to: BOX PATENT APPLICATION, Assistant Commissioner of Patents, Washington, DC 20231.

Signature of Person Mailing Carol McClelland

Name of Person Mailing CAROL MCCLELLAND  
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206070 24047660

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09/914047

## FOLDABLE/COLLAPSIBLE STRUCTURES

The present invention relates to foldable/collapsible structures, and more particularly to a lightweight animal shelter having excellent thermal insulating features and ease of assembly/disassembly. The shelter can therefore be readily converted into a compact condition for ease of storage and/or transport, and also presents itself as an attractive or classic looking doghouse design when fully deployed. This invention also relates to a pet carrier transportation device and in particular to a collapsible/foldable pet carrier or portable structure that absorbs or isolates liquid waste that may be present in the carrier and which carrier design further provides a more sanitary condition for the pet when in transport. Furthermore, the present invention also relates to storage containers, including such containers as a cooler, or ice chest, which has generally rigid walls, yet can be collapsed or folded into a configuration which takes up much less space, and can therefore be easily stored and/or transported. Finally, the invention herein also relates to a collapsible structure in general, e.g., a collapsible consumer waster container.

A fair amount of disclosures have been put forward in recent years, seeking to develop a foldable/collapsible structure primarily for use as an animal shelter. More specifically, a number of pet houses and enclosures have been proposed with the purpose of providing a sleeping area for a pet and for confining a pet, when necessary, for example, when traveling. However, these structures have all tended to be bulky, of relatively high weight, difficult to move from one location to another, and more importantly, not sufficiently foldable/collapsible for ease of storage and transport. Such prior art designs also have not considered the development of a structure that provides appropriate thermal insulation, to thereby provide the pet with comfortable shelter. In short, to date, existing dog houses have been: 1. difficult to construct; 2. take up valuable space in distribution and at retail outlets; 3. are difficult to transport for both the distributor and retailer; 4. are difficult for consumers to transport home or to different locations; and 5. are difficult for consumers to store when not in use.

For example, one early attempt at producing a collapsible animal cage is reported in U.S. Patent No. 3,896,766, which discloses a collapsible animal cage formed of

1 rectilinear welded wire fabric. The cage is said to have a front and rear rectangular end  
2 wall structure movable between an erected position and a folded position overlying a  
3 litter tray on the bottom of the cage, side wall structures intermediately hinged between  
4 their tops and bottoms and foldable over the end wall structures, and a top hingedly  
5 secured to the top of the side walls therein.

6 U.S. Patent No. 4,903,637 discloses what is termed a "container" to house or carry  
7 small household pets, that may be quickly and manually formed between an erected use  
8 mode and a flat folded storage mode. The container is of a gable roofed house  
9 configuration in its erected mode and comprises an interconnected structure formed by  
10 hingeably related rigid planar elements that occupy a relatively small volume in the  
11 folded storage mode. Handles carried by the roof provide aid in manual carriage, and  
12 releasable fasteners maintain either an erected or storage mode, and an end wall provides  
13 a selectively latchable door.

14 U.S. Patent No. 4,576,116 discloses a collapsible A-frame house providing a  
15 common site for a cat to rest, exercise and play comprised of a roof of carpet-like material  
16 including two integral roof panels with their bottom edges connected to opposing edges  
17 of a floor panel also of a carpet-like material. Stiffening panels are affixed onto the  
18 backside of the roof panels. A cord with two ends slidably passes through the peak into  
19 the house, with cat amusement objects connected to each end. The cord additionally  
20 provides a manual handle for lifting the house. Collapsing the house for storage or  
21 transport, the house is initially lifted by the cord adjacent the peak. The flexible nature of  
22 the floor panels permits an outward folding or buckling of the floor along its longitudinal  
23 centerline to thereby completely collapse the house into a folded condition.

24 U.S. Patent No. 4,520,758 discloses an animal house which is particularly  
25 adaptable for use with cats. The house is formed of an elongated base adapted to stand  
26 substantially vertical and a platform at the upper end of the house to form an animal  
27 perch. The base is formed of a single piece of self-supporting material with appropriate  
28 fold lines being provided by either areas of weakening or by rigid material at the location

1 of the fold lines or by appropriate hinges to permit folding. The base can be formed of  
2 three separate panels folded into a three-sided figure of triangular cross section.

3 U.S. Patent No. 5,078,096 discloses a curvilinear, four-sided pyramidal container  
4 for housing and carriage of small household pets. The container provides a flexible fabric  
5 cover which defines optionally coverable mesh windows and an optionally coverable  
6 openable access door structure. The container carries a rigid bottom insert and is  
7 supported by a rod frame having a square, releasably interconnected bottom element  
8 formed of four interconnected semi-rigid rods and two arched, resiliently deformable  
9 support rods extending upwardly between opposed corners of the structure, all said rods  
10 carried in loops defined on the inner surface of the cover. The support rods are  
11 selectively removable to allow assembly and collapse of the structure for storage.

12 U.S. Patent No. 5,121,710 discloses a collapsible doghouse to be used indoors or  
13 outdoors, to provide a comfortable and easy to clean place for a dog to rest or seek shade.  
14 The doghouse includes elongated side walls, a pair of distal walls, one of which includes  
15 an arched entranceway and another of which includes a cutout drainage slot, a roof  
16 portion, and a weightable base portion, all of which are securely, yet easily removably  
17 connected, and are formed of a substantially solid, yet flexible, water repellent plastic  
18 which will facilitate easy cleaning and drainage, and lightweight transportation.

19 U.S. Patent No. 5,335,618 discloses a collapsible animal enclosure comprising a  
20 house unit with spaced side walls and a roof of pliable material, and opposite ends  
21 forming an enclosed area for housing an animal. Support bows extend transversely across  
22 the sidewalls and roof for holding the sidewalls and roof in an open, spread apart  
23 condition. The house unit can be collapsed between a fully erect condition and a  
24 collapsed condition in which the ends are pushed inwardly towards one another,  
25 collapsing a pliable material between the ends in an accordion-folded manner.

26 U.S. Patent No. 5,425,681 discloses an animal house, including a cap, a base, four  
27 posts and four walls secured together. Both the cap and base include a groove formed in  
28 the inner peripheral portion, and the posts each include two slots for engaging with the

1 edges of the walls so as to solidly secure the walls in place. The animal house may be  
2 folded into a compact configuration.

3 U.S. Patent No. 5,465,686 discloses a disposable, collapsible pet house foldable  
4 from a unitary blank of material received in a flat state, the house being foldable from the  
5 blank between a collapsed state for shipping, storage and disposal and an enclosed, erect  
6 state for use.

7 U.S. Patent No. 5,564,454 discloses a collapsible structure having front and back  
8 ends with front and back support members including a single central support member to  
9 pass in direct line along the cover means and thus support the entire structure at roughly  
10 the center of the cover means. The item may be sewn and easily manufactured in a  
11 fashion so that upon being collapsed it occupies the smallest possible volume and has no  
12 overlapping support members.

13 U.S. Patent No. 5,626,098 discloses a collapsible cage for dogs or rabbits  
14 comprising a rectangular base, fold-down end walls and folding side walls and a roof.  
15 The walls and roof are made of metal grids. The end walls fold down onto the base one  
16 over the other. The sidewalls fold in the middle and are hinged at the top to opposite  
17 edges of the roof allowing the sidewalls and roof to collapse onto the base over the end  
18 walls. The base has a pull out tray and a pan and an access door is provided in one of the  
19 end walls. Releasable clips are provided to hold the walls and roof together in an  
20 elevated position of the structure.

21 U.S. Patent No. 5,727,502 discloses a collapsible pet home having a base, side  
22 walls, end walls and a roof which can be converted into an exercise pen for the pet by  
23 folding the end walls down onto the base, setting the base on end, and using the base, side  
24 walls and roof to form peripheral walls of the exercise pen. The entire structure is said to  
25 fold down into a compact package.

26 U.S. Patent No. 5,669,331 discloses a pet housing expandable to hold a pet and  
27 collapsible to suitcase size for manual transport including a pair of platforms and first and  
28 second pairs of spaced walls. The walls are pivotally attached at opposite ends of the  
29 platform and are hinged at intermediate positions for collapse and expansion.

1 U.S. Patent No. 5,752,470 discloses a collapsible system which can be used for  
2 portable pet houses, as well as for emergency housing in times of disaster. When using this  
3 system, the structure will collapse by pushing in the sides from the middle, and by letting  
4 the front and back fold onto each other.

5 U.S. Patent No. 5,769,028 discloses a pet carrier including a main and insert unit.  
6 The main unit defines a carrying space having a closed bottom and four sides, one of  
7 which has an opening therethrough large enough to permit an animal to enter the space  
8 through the opening. The insert unit has a closed top, four sides, and an open bottom.  
9 After the animal has entered the main unit, the insert unit is lowered down into the main  
10 unit to close off the side opening. Then a foldable top closure for the main unit is folded  
11 to secure the carrier and form a handle structure for carrying the carrier. Both units are  
12 foldable and are structured to provide an enhanced strength carrier.

13 U.S. Patent No. 4,006,713 discloses a collapsible dog house with two opposite  
14 side walls, a front wall, a rear wall, a roof and a floor which are separable components,  
15 preferably made of marine plywood. The floor and roof are provided with rectangular  
16 skirts. The sidewalls are notched and grooved to interfit with the skirts and front and rear  
17 walls. Interlocking means are provided on the two skirts so that when the skirts are in  
18 confronting abutment they define the perimeter of a case whose sides are the roof and  
19 floor of the dog house.

20 U.S. Patent 4,109,427 discloses a foldable structure considered to be primarily  
21 useful as a doghouse. The structure is foldable between an expanded configuration in  
22 which parallel sidewalls are connected by a top, a bottom and parallel ends and a folded  
23 configuration in which the side walls are adjacent to one another. In order to achieve a  
24 folding action, the top, bottom and the ends each consists of a set of two parts. The parts  
25 of each of these sets extend beyond the sidewalls. A first group of hinges are used to  
26 pivotally connect the parts of each of the sets to the sidewalls. The second group of  
27 hinges are employed to connect the parts of each set midway between the sidewalls.

28 U.S. Patent No. 4,195,593 discloses a portable pet-house which defines an A-  
29 frame, the roof panel of which are pivoted at the top such that they are collapsible into a



1 generally planar, carrying mode, preferably being floor and end wall members carried  
2 internally between the roof panels when the unit is in its portable mode.

3 U.S. Patent No. 4,467,572 discloses a collapsible dwelling for animals, including  
4 a plurality of elements hingedly joined with each other which when in assembled  
5 relationship, cooperatively define an enclosure suitable for pets. All elements are hinged  
6 strategically since the elements can be partially disassembled and the aggregate parts  
7 stacked one upon the other, for inclusion within a container having a length and width no  
8 greater than that of the largest elements.

9 U.S. Patent No. 4,169,428 discloses a sleeping bag for pets formed from a  
10 multiple ply padded sheet of deeply quilted material which is normally folded along its  
11 central portion with opposite halves in overlying relationship to form lower and upper  
12 layers and with the edge portions of each half in alignment with each other.

13 PCT Application No. WO 97/47185 discloses a house for feeding small animals,  
14 especially dogs or cats made of a folded section of cardboard or other foldable material  
15 with an essentially square lower section forming a bottom and side walls and a roof  
16 shaped upper section, where the lower section has an access aperture for the animal. The  
17 lower and upper sections are made in one piece from a folded section, where the upper  
18 section can be fitted on and secure the lower section where there is at least one removable  
19 inlay of corrugated cardboard or another absorbent material covering the bottom.

20 European Patent 0742 999B1 discloses an animal shelter, comprising a box  
21 having at least one strip curtain made of elastic material in front of an entrance to the box  
22 interior, characterized in that the strips are fastened in a releasable and in particular too-  
23 free, exchangeable manner in a clamp mounting which is fastened to the box.

24 Finally, as it relates to background art concerning foldable/collapsible structures,  
25 European Patent Application 0 3667 626 A1 discloses a portable folding shelter for  
26 domestic animals. The shelter comprises a pair of sidewalls articulated at the top edges  
27 thereof to a respective sloping element in turn articulated to a central element, a rear and a  
28 front apertured wall articulated to the side edges of the sidewalls and each foldable along

1 a middle vertical line, the roof of the shelter being provided with a withdrawing holding  
2 handle.

3 Turning to a background consideration relating to pet carriers, it is noted that a  
4 variety of pet carriers have been also been reported in the prior art, all aimed in one form  
5 or another to facilitate pet transportation. Specifically, pet carriers are commonly used by  
6 pet owners for carrying their pets on trips or as a means for containing the pets when the  
7 pets are shipped from one point to another. Pet carriers also commonly double as  
8 sleeping quarters for the pet as the owner may contain the pet overnight to prevent the pet  
9 from wandering and potentially damaging the home or hotel room in which the owner is  
10 occupying.

11 There are, however, some shortcomings inherent to common pet carriers. During  
12 transport, the pet will require food and water and periodically will need to relieve its  
13 bodily functions. In addition, the food and water itself, which are placed in the pet  
14 carrier, may be overturned by the pet or by carrier movement during transportation.  
15 Accordingly, in either case, the pet carriers to date have been inadequate in their ability to  
16 efficiently deal with such problems and to provide the pet with a stable hygienic  
17 environment.

18 For example, some common pet carriers currently available have been advertised  
19 in the "R.C. Steele Wholesale Pet Supply Catalog", Brockport, New York, which  
20 illustrates "Dorskocil Kennels" as a lightweight, portable kennel designed for safe  
21 transportation. Also shown is the "Vari-Kennel" design that contains what is described as  
22 a "dial latch system" for ease of assembly. However, neither of these designs display any  
23 aspect of how to preserve a sanitary condition in the specific carrier should the animal be  
24 forced to relieve itself.

25 More specifically, reviewing the patent literature as it applies to pet carriers  
26 begins with U.S. Patent No. 5,769,028, entitled "Pet Carrier" which discloses a carrier  
27 including a main unit and an insert unit. The main unit defines a carrying space having a  
28 closed bottom and four sides, one of which has an opening therethrough large enough to  
29 permit an animal to enter the space through the opening, and the insert unit has a closed

1 top, four sides, and an open bottom. After the animal has entered the main unit, the insert  
2 unit is lowered down into the main unit to close off the side opening. Then a foldable top  
3 closure for the main unit is folded to secure the carrier and form a handle structure for  
4 carrying the carrier. Both units are foldable and are structured to provide an enhanced  
5 strength carrier.

6 U.S. Patent No. 5,503,107 entitled "Pet Carrier" discloses a container for  
7 manually transporting a pet having a litter box, food container and water container therein  
8 and sliding doors accessible from the exterior of the container for selectively closing the  
9 litter box, food container and water container to prevent inadvertent spillage. The  
10 container may also include a single compartment or two detachably connected  
11 compartments in order that a liter box compartment may be selectively separated from a  
12 food and water compartment. Detachable handles are provided in order that each separate  
13 compartment of the dual compartment embodiment may be carried separately or as a  
14 unified compartment.

15 U.S. Patent No. 5,839,392, entitled "Pet Carrier" discloses a corrugated plastic pet  
16 carrier with two side panels. A side panel fold line extends between the base panel and  
17 each side panel. In addition, a diagonal fold line is said to extend from each corner of the  
18 base panel to a first median fold line for collapsing the base panel, side panels and end  
19 panels inwardly for collapsing the container from an erect position to a collapsed,  
20 generally flat position, and back to an erect position.

21 U.S. Patent No. 5,671,698 entitled "Pet Carrier" discloses a pet housing having a  
22 rigid bottom panel enclosed in a bottom cover which is attached to a plastic mesh which  
23 is shaped to form the pet carrier sides and top. The plastic mesh is attached to inverted U  
24 shaped rigid frame members which hold the shape of the sides and top as well as provide  
25 structural support to protect the pet being transported. The pet carrier has a rear end panel  
26 and door of plastic mesh to complete the enclosure. There is a provision for a tray and  
27 absorbent pad in the bottom of the pet carrier for hygiene as well as a cover to protect the  
28 pet from the environment.

1 U.S. Patent No. 5,133,294, entitled "Pet Carrier for Vehicles" discloses a pet  
2 carrier for use in a vehicle comprising a platform sized to generally fit on the passenger  
3 seat. Front, rear and side panels are pivotally connected to the platform for movement  
4 between generally horizontal positions and upright positions wherein they form a pet  
5 enclosure upstanding from the platform.

6 Attention is directed to U.S. Patent No. 5,715,772 entitled "Pet Carrier Absorbent  
7 Pad" which discloses an absorbent pad designed to be used with pet carriers to absorb  
8 liquids that may be present. Specifically, the pad is said to contain an absorbent layer  
9 having first and second sides, a first single direction moisture conveyor positioned  
10 proximate to at least one side of the absorbent layer for allowing moisture to pass toward  
11 the absorbent layer and for resisting passage of moisture out of said absorbent layer. A  
12 second single direction moisture conveyor is positioned proximate to said second side of  
13 said absorbent layer, wherein the first and second direction moisture conveyors are  
14 oriented about said absorbent layer so that moisture travels across said moisture  
15 conveyors only toward said absorbent layer.

16 Finally, as it relates to background art concerning pet carriers, attention is also  
17 directed to U.S. Patent No. 4,484,540 entitled, "Collapsible, Portable Domestic Pet  
18 Cage", which discloses a collapsible, portable domestic pet cage for carrying with a pet  
19 keeper such domestic pets as dogs, cats and the like, wherein bent portions of the cage  
20 can be readily constructed using any connection means and fixing means, and when  
21 collapsed dimensionally in small form, the whole circumferential walls of the cage is  
22 accommodated between vertical walls of a ceiling plate and erected walls of a receptacle  
23 plate or dish so as to be made dimensionally in a small size.

24 Turning next to a background consideration relating to portable storage designs  
25 for the purpose of, e.g., providing the consumer a convenient method to store and  
26 transport perishable goods, the following summary is provided.

27 First, U.S. Patent No. 5,562,228 discloses a collapsible cooler having four side  
28 walls hingedly attached to a bottom panel. Each of the four side walls is composed of  
29 two trapezoidal subassemblies hingedly connected about a center longitudinal axis, such

1 that the two subassemblies meet along the shorter edge of the trapezoid. The side walls  
2 further comprises flexible corner panels. The top of the container comprises a lid which  
3 is hingedly attached to the long side of one of the upper side wall subassemblies. This  
4 construction allows the container to be collapsed downward by pushing on the top panel.  
5 Similarly, the container is expanded by pulling up on a strap which is attached to two  
6 opposing upper side wall subassemblies. The cooler further contains sealed modules of  
7 "blue ice", which is a heat transfer material composed of water and glycol, or a similar  
8 heat transfer material, contained within the panels of the container.

9 U.S. Patent No. 5,622,276 discloses a collapsible container/cooler which has four  
10 side walls pivotally connected to a bottom panel in such a manner that the four walls can  
11 pivot inward to lie flat on one another in a manner parallel to the bottom panel. The  
12 container further comprises an insulated liner, which is permanently attached to two  
13 opposing walls and detachably connected to the remaining two walls, and an insulated,  
14 removable lid. The container is structurally supported by snaps which serve to lock the  
15 side walls in position. When these snaps are engaged they constrain the movement of the  
16 side-walls, thereby creating a rigid, right rectangular container.

17 U.S. Patent No. 4,091,852 discloses an inflatable box composed of six inflatable  
18 panels integrally connected so as to form a rectangular box having a top, bottom, first and  
19 second end, and first and second side. The joint between each of the panels consists of a  
20 defined fold line. Additionally, integral with, and therefore connecting adjacent edges of  
21 adjacent end and side panels, is a rectangular web of non-inflatable material such that  
22 when the box is assembled, with the sides and ends normal to the bottom panel, the two  
23 webs on each end of the bottom panel will fold across the outside of the end panels so as  
24 to provide structural support for the assembled box and therein complete the box in a  
25 fluid-tight configuration. The insulating character of the assembled box derives from the  
26 air-pockets of the inflated panels.

27 U.S. Patent No. 5,050,766 discloses a collapsible ice chest made from corrugated  
28 paper. The container is constructed from a rectangular sheet that is folded to create a  
29 bottom panel and four side walls with gusset panels which fold over onto the sides, such

1 that the container created is free from any leaks. The ice chest is supplied to the  
2 consumer with the bottom pre-filled with ice and the majority of the vertical expanse of  
3 the side walls folded down parallel to the bottom panel thereby creating a covered ice tray  
4 of relatively low profile and small volume. The ice chest is further supplied with a lid  
5 that telescopes onto the container, even when folded into the ice tray configuration in the  
6 described manner. At time of use, the container is removed from cold storage, and the  
7 side walls are folded into a vertical configuration, therein creating a ready to use ice chest.  
8 This ice chest is intended to be cheap and largely disposable, however it is disclosed that  
9 after being used the container can be emptied and folded back into its initial  
10 configuration, thereby greatly reducing its size, and reused simply by re-expanding the  
11 side walls in the previously described manner.

12 Accordingly, upon extensive review of all the prior art noted above, it is first  
13 apparent that a completely foldable, collapsible structure, suitable as a shelter for a pet,  
14 comprised of lightweight material having excellent thermal insulating features and ease of  
15 assembly/disassembly, remains generally unavailable. Therefore, it is a first object to  
16 overcome the disadvantages of the various structures noted above, and prepare a foldable,  
17 collapsible structure which is more economical to manufacture and purchase, and which  
18 can readily be converted into a compact condition for ease of storage and/or transport and  
19 also presents itself in an attractive or classic-looking doghouse design when fully  
20 deployed. Yet another object of this invention is to provide a foldable/collapsible  
21 structure suitable for a pet which simple to set up, take down and convert from one use to  
22 another.

23 Furthermore, with respect to the extensive review of the prior art related to pet  
24 carriers, although certain pet carrier designs have been disclosed which are, as noted,  
25 collapsible, and although absorbent pads of certain construction are known, there remains  
26 an on-going demand for a pet carrier design which more efficiently deals with liquid  
27 waste build-up, and which also collapses into a substantially flat configuration for ease of  
28 storage/transportation when not in use. Stated another way, pet carriers to date have  
29 shown themselves to be relatively bulky and heavy thereby failing to provide a simple,

1 lightweight and portable pet carrier which provides both comfort and good hygiene for  
2 the pet, and also provides a safe/sturdy structure for protection during transport.

3 Accordingly, it is also a general object of this invention to provide a pet carrier  
4 that is conveniently collapsible for storage, and which provides both the pet and the pet  
5 owner with a advantageous method to deal with liquid animal waste which occurs in the  
6 carrier over extended periods of time.

7 More specifically, it is also an object of this invention to provide a pet carrier  
8 design that allows for ease of cleaning of animal waste, and which isolates the animal  
9 from the liquid waste when the pet is forced to remain in the carrier after relieving itself.  
10 Furthermore, it is also an object of this invention to provide a more humane method of  
11 transporting pets. That is, it is an object of the invention herein to provide a pet carrier  
12 construction wherein the pet can be provided with essential liquid nourishment when in  
13 transport without fear of the pet becoming exposed to unsanitary and unhealthy  
14 conditions due to the evolution of a soiled environment.

15 Finally, and once again, as can be seen from the above review of the prior art,  
16 while various attempts have been made to provide consumer products such as a break-  
17 apart cooler, there remains an on-going need to improve upon such designs in order to  
18 provide a more durable yet collapsible configuration, that readily converts from a portable  
19 cooler mode to storage mode with minimal hand operation.

20 It is therefore also an additional object of this invention to provide such a new and  
21 improved collapsible cooler design which is of the aforementioned durable and reliable  
22 construction, and which also provides a waterproof enclosure for ice cooling, and makes  
23 use of living type hinge structure along with a strategic placement of hinge points in the  
24 cooler walls for collapsibility and ease of transport. In addition, it is also an object of this  
25 invention to provide a portable and collapsible structure that would be suitable, for  
26 example, to restrict access to consumer waste containers and the like, and which would  
27 readily provide the consumer with a convenient, sanitary, and cosmetically pleasing  
28 alternative for storing waste containers

1       **FIG. 1** is a front-end view of the collapsible/foldable structure of the present  
2 invention.

3       **FIG. 2** is a front-end view of the collapsible/foldable structure of the present  
4 invention, in a partially collapsed/folded state.

5       **FIG. 3** is a front-end view of the collapsible/foldable structure of the present  
6 invention, in a fully collapsed/folded state.

7       **FIG. 4** is a front/side view of the collapsible/foldable structure of the present  
8 invention, in a partially collapsed/folded state.

9       **FIG. 5** is an exploded side/front view of the collapsible/foldable structure of the  
10 present invention, illustrating an optional clip-on chimney feature with solar-powered fan.

11       **FIG. 6** is an exploded view of the optional assembly recess and location recess for  
12 improved stability of the foldable/collapsible structure when in assembled condition.

13       **FIGS 7 and 8** are exploded views of appropriately identified designated sections  
14 of **FIG. 6**.

15       **FIG. 9** illustrates a perspective view of one preferred embodiment pet  
16 carrier/portable structure design.

17       **FIG. 10** illustrates a perspective view of the pet carrier removable tray.

18       **FIG. 11** illustrates a front perspective view of a preferred pet carrier design.

19       **FIG. 12** illustrates a side perspective view of a preferred pet carrier design in  
20 partially collapsed configuration.

21       **FIG. 13** illustrates a front perspective view of a preferred pet carrier design in  
22 partially collapsed configuration.

23       **FIG. 14** illustrates a front perspective view of the preferred pet carrier design in a  
24 fully collapsed configuration.

25       **FIG. 15** illustrates yet another preferred embodiment of the present invention is  
26 which a perforated removable tray is supported by ribbed supports on the bottom of the  
27 pet carrier/portable habitat.

28       **FIG. 16** provides a plan view of the pet carrier/portable habitat of **FIG. 15**.



1        **FIGS. 17 and 18** provide alternative front sectional view of the pet  
2 carrier/portable habitat of **FIG. 15**.

3        **FIG. 19** provides a more detailed side sectional view of the front door section of  
4 the pet carrier/portable habitat.

5        **FIG. 20** is yet another front sectional view, illustrating the optional use of food  
6 and water dispensers.

7        **FIG. 21** is a side sectional view of the pet carrier/portable habitat of **FIG. 15**.

8        **FIG. 22** is a perspective view of the invention herein as a collapsible cooler.

9        **FIG. 23** is a side sectional view of the invention herein along lines A-A of **FIG.**  
10 **22**.

11        **FIG. 24** is perspective view of the collapsible cooler in a partially collapsed  
12 configuration.

13        **FIG. 25** is a perspective view of the collapsible cooler in a fully collapsed  
14 configuration.

15        In summary form, and in a first embodiment, the invention herein relates to a  
16 collapsible/foldable structure comprising a top roof and a bottom platform defining a top  
17 and bottom of said structure, and a vertically disposed lower side section on said bottom  
18 platform. Front and rear collapsible walls are provided, each pivotally attached to said  
19 vertically disposed side section to provide for pivotal collapse of said front and rear walls.  
20 The front wall has an opening for egress and ingress of an animal. A pair of sidewalls are  
21 included each pivotally attached to said roof to facilitate inward collapse of said sidewalls  
22 when said sidewalls are pivoted toward said bottom platform, said sidewalls defined by  
23 an upper and middle section including said lower vertically disposed side section,  
24 wherein said upper and middle sections are pivotally attached to one another and said  
25 middle and lower section are pivotally attached to one another so that said upper and  
26 middle sidewall sections can be pivoted inwardly towards said bottom platform. The top  
27 roof optionally comprises two roof sections pivotally attached to one another so that said  
28 two roof sections can collapse downwardly along said pivotable attachment toward said  
29 bottom platform. The sidewalls contain an outer and inner surface thereof, and said upper

1 and middle sidewalls are pivotally attached by a continuous outer surface of said  
2 sidewalls.

3 In yet another summary embodiment, the present invention relates to a  
4 collapsible/foldable structure comprising a top roof and a bottom platform defining a top  
5 and bottom of said structure and a vertically disposed lower side section on said bottom  
6 platform. Front and rear walls are included, said front wall having an opening for egress  
7 and ingress of an animal. The structure also includes a pair of sidewalls each pivotally  
8 attached to said roof to facilitate inward collapse of said sidewalls when said sidewalls  
9 are pivoted toward said bottom platform, said sidewalls defined by an upper and middle  
10 section including said lower vertically disposed side section, wherein said upper and  
11 middle sections are pivotally attached to one another and said middle and lower sections  
12 are pivotally attached to one another so that said upper and middle sidewall sections can  
13 be pivoted inwardly towards said bottom platform. At least one of said pivotal  
14 attachments of said sidewalls is optionally a living hinge substantially along the length of  
15 said sidewall.

16 In still yet another summary embodiment, the present invention relates a  
17 collapsible consumer container such as a foldable/collapsible structure for storing  
18 perishable goods comprising a horizontally disposed bottom panel and a vertically  
19 disposed side section, a top panel, a pair of side panels defined by upper and middle side  
20 sections including said vertically disposed side section, including first and second end  
21 panels. The first end panel and second end panel are then hingedly attached to said  
22 vertically disposed side section to provide for pivotal collapse of said first and second end  
23 panel, and said upper side section is hingedly connected to said top panel and said middle  
24 side section, and said middle section is hingedly connected to said vertically disposed  
25 side section, wherein said side panels can be pivoted inwardly towards said bottom panel.

26 Turning next to a more detailed description of the various preferred embodiments  
27 of the present invention, as illustrated in **FIG. 1**, the collapsible/foldable structure of the  
28 present invention is shown generally at **10**, and comprising sidewalls **12** and **14**.  
29 Sidewalls **12** and **14** contain an upper **16**, middle **18** and lower generally vertically

1 disposed section 20. As can be seen, the sidewalls contain a pivot 22 preferably disposed  
2 on the outer surface of the sidewalls 12 and 14, and a pivot 24, preferably disposed on the  
3 inside surface of the sidewall, such that when collapsing said sidewalls (see FIG. 2) the  
4 upper 16 and middle 18 sidewalls collapse inwardly and towards the bottom platform 26.  
5 In addition, upper sidewall 16 is pivotally attached to either roof section 28 and 30 at 17.

6 As also shown in FIG. 1, the collapsible/foldable structure 10 further contains a  
7 front wall 29 which preferably defines the front portal opening. Preferably, and as also  
8 shown in FIG. 1, the opening is of a portal/circular configuration of the classic pet-shelter  
9 or doghouse design. In addition, structure 10 further contains a top roof section  
10 comprising two roof sections pivotally attached to one another at 32, so that roof sections  
11 28 and 30 can collapse downwardly along said pivotable attachment 32 toward said  
12 bottom platform 26.

13 In that regard, attention is directed to FIG. 2, which illustrates the  
14 collapsible/foldable structure of the present invention in a partially collapsed state. As  
15 illustrated therein, the upper 16 and middle sidewall sections are collapsed and disposed  
16 inward in the structure 10 and begin to assume the fully collapsed planar position, best  
17 illustrated in FIG. 3. Also, as shown in FIG. 2, preferably, front wall 29, which is  
18 pivotally attached to vertically disposed section 20, is also made to collapse inwardly to  
19 rest on bottom section 26, and preferably, rear wall 34, which is also pivotally attached to  
20 vertically disposed section 20, also collapses inwardly and rests upon front wall 29 when  
21 in a fully collapsed state. Those skilled in the art, however, will recognize that it may  
22 also be preferable to modify such pivotable attachment to facilitate the resting of front  
23 wall 29 on top of rear wall 34, when again, in a collapsed state.

24 In addition, as shown in FIG. 1, front wall 29 may contain, at a section disposed  
25 directly beneath pivot location 32, an opening, preferably of semi-circular configuration,  
26 to facilitate ventilation of the structure. Such opening can also be optionally placed in the  
27 rear wall 34.

1 Attention is next directed to **FIG. 3**, which illustrates the present invention in a  
2 fully collapsed condition. As can be seen in **FIG. 3**, the interaction of pivot points 17, 22,  
3 24, as well as the inward collapse of the front 28 and rear collapsible walls 34 which are  
4 pivotally attached to the bottom section 26 provide the unique and previously unavailable  
5 ability to collapse the classic pet shelter design illustrated in **FIG. 1** into a substantially  
6 flat, readily transportable structure.

7 Turning next to **FIG. 4**, as better illustrated therein, front wall 29 is shown as  
8 pivoting inwardly into structure along pivot edge 36. With attention next directed to  
9 **FIG. 5**, structure 10 is shown in cut-away view with respect to bottom section 26. More  
10 specifically, bottom section 26 preferably contains a hollow section 41 in which sand or  
11 other weight or load material can be incorporated, to strategically add weight to the  
12 bottom section to facilitate placement stability. In addition, as also shown in **FIG. 5**, the  
13 structure 10 may optionally contain an attached chimney type feature, which in preferred  
14 embodiment, is configured to contain a solar-powered fan so that the animal or pet inside  
15 shelter 10 is treated to improved ventilation.

16 In addition, in preferred embodiment, it can be appreciated that certain exposed  
17 surface of shelter 10 may be vulnerable to chewing and destruction by a pet, and  
18 therefore, should preferably be protected from such action by the strategic placement of  
19 protection material. In that regard, attention is again directed to **FIG. 5**, wherein exposed  
20 and/or overhanging surfaces 38 of the roof section or front entrance are preferably  
21 protected with a layer of material that restricts the ability of the animal to chew on such  
22 exposed surfaces and destroy the structure. Accordingly, exposed surfaces are preferably  
23 further protected with plastic sheeting materials, including, but not limited to polyolefins,  
24 vinyl polymers, styrene based polymers, acrylonitrile-butadiene-styrene resins, vinyl  
25 polymer resins, engineering thermoplastics, and thermoset type resins or coatings which  
26 would all provide the necessary barrier to chewing destruction of an animal.

27 In addition, as also illustrated in **FIG. 5**, preferably, bottom platform 26 preferably  
28 contains a hollow section 41 for the incorporation of a ballast material, such as sand, to

1 improve the weight of structure 10 for purposes of positioning stability. Alternatively,  
2 bottom platform can be made from a material that is itself of greater weight relative to the  
3 sidewall and/or roof section.

4 With all of the above in mind, it is herein disclosed that preferably, the materials  
5 employed for the structure 10 are first selected from those materials that provide thermal  
6 insulation, and accordingly, include expanded type polymer materials, preferably foam  
7 materials, optionally containing a film type surface. Along those lines, and again with  
8 reference to **FIG. 1**, roof sections 28 and 30, as well as sidewall sections 16, 18 and 20,  
9 front wall section 29, rear wall section 34, and bottom platform 26 are all preferably made  
10 from expanded polymeric foam material, such as expanded or foamed polystyrene  
11 material, which foam material may contain an film surface of high-impact polystyrene. In  
12 addition, other foam materials are suitable, including but not limited to polyurethane type  
13 foam materials, polyurea/urethane, polyurea, trimer foam, etc. Accordingly, in broad  
14 embodiment, any synthetic foam material that provides thermal insulation and  
15 temperature control of the interior of the foldable/collapsible structure will be suitable for  
16 construction of the present invention.

17 Furthermore, the above identified sections of **FIG. 1** can also be suitably prepared  
18 from non-foamed plastic material, or, for that matter, plastic material which provides a  
19 void or null space between sections thereof, which would also similarly provide thermal  
20 insulation characteristics. Moreover, the structure of the present invention can be  
21 prepared from structural type foam material, which, is preferably made from engineering  
22 type plastic resins such as polycarbonate resin. As those skilled in the art are aware,  
23 structural foam material, while perhaps not as efficient as expanded or cellular type foam  
24 material, still can provide thermal insulation efficiency, while at the same time, structural  
25 integrity to the various compents (sidewalls, bottom platform, roof section) of the present  
26 invention.

27 In addition, it is also possible to prepare structure 10 out of material made from  
28 such techniques as gas-assisted injection molding. Such process, which preferably makes  
29 use of gases such as nitrogen, provides an inert gas to the interiors (null space) of the

sidewalls 12 and 14, roof sections 28 and 30, front wall 29 and rear wall 34. In addition, said structural components can also be made hollow and optionally contain common thermal insulation media such as fiberglass or cellulose type material.

When foam material is employed in the present invention, it has also been found preferable to include, on the outer layer of the foam (i.e., that surface exposed to weather) a film protective layer that prevents weather damage to the foam layer, and also provides a better or improved cosmetic appearance. That is, those skilled in the art will appreciate that the film layer can be made to assume a wood-like grain appearance, such that the structure 10 takes on the appearance of a wood structure, which is cosmetically pleasing to the consumer. In that regard, a particularly preferred embodiment centers on the use of expanded polystyrene foam for the structure 10, and an outer film layer, also of polystyrene resin. Insulating expanded polystyrene will preferably have a thickness on the order of 1.25 cm or more to provide an insulating layer to keep the occupant of the structure warm in cold weather, and cool in hot weather.

On that note, the outer film material can also conveniently serve as an integral type hinge material. For example, pivots 32, 17, 22 and 24, as shown in FIG. 1, can of course, comprise an add-on standard type hinge construction, and can therefore be of sufficient number (running along the length of the structure) to effectuate the foldable/collapsible mechanism herein described. Alternatively, said pivots can also run the entire length of the structure, and be made of a polyolefin (polypropylene), which therefore provides a living-hinge characteristic to the present invention. Again, the living hinge can be either a non-integral feature of the roof, sidewalls, and bottom section (i.e. an add-on), or, alternatively, can be integral to said structural components as illustrated in the drawings.

Finally, attention is directed to FIGS. 6-8, which illustrates, among other things, that in preferred embodiment, bottom vertical sidewall section 20 is made to rest within bottom platform 26. In addition, preferably, the front and rear walls are made to contain a location recess 42 and an assembly recess 44. Accordingly, those skilled in the art will appreciate that the location recess 42 and assembly recess 44 will, in optional

1 embodiment, improve and lock roof sections **28** and **30** to said front and rear side wall  
2 sections, thereby providing improved, but by no means necessary, structural integrity to  
3 the collapsible/foldable structure of the present invention.

4 While preferred embodiments of the invention provide that the front and rear  
5 walls are hingedly attached to the vertical sidewall section **20** so that they can be folded  
6 inwardly and beneath the side walls and roof, they can be physically removed from the  
7 front and rear openings. When in the open position, the front and rear walls act to further  
8 support the sides and roof, and when the front and rear walls are completely removed  
9 from the structure they can be either placed on top of the structure, inside or underneath  
10 and then optionally be bound up with suitable fastening so that the complete structure can  
11 be shipped as one package.

12 In all of the above structures, it is also noted that the sidewall sections **16**, **18** and  
13 **20** will hinge on either the inner surface or the outer surface of said sidewalls depending  
14 upon whether the hinge is moving outwardly or inwardly during the collapsing motion.  
15 That is, placing the hinge on the inner or outer sidewall becomes necessary because of the  
16 thickness required for the preferred double wall construction, which, as noted, provides  
17 an open region for insulation.

18 In addition to the above, the upper portion **16** of the sidewall, which is hinged at  
19 **22** to the sidewall **18**, may be connected to a flat roof section. The central flat section  
20 with the two upper sidewalls (which would now be inwardly sloping) would then form  
21 the roof of the house. This type of optional configuration is illustrated, in part, in **FIG.**  
22 **18**, as applied to the related pet carrier. In this preferred alternative embodiment of this  
23 form of the invention, the hinges are positioned on the inner and outer edges of the walls  
24 adjacent the inner and outer edges as required for proper collapsing action.

25 A preferred pet carrier/portable structure design in accordance with the present  
26 invention is now illustrated in **FIG. 9**. As shown therein, the pet carrier **110** contains a  
27 bottom panel **112** and tray **114** removably placed on the bottom panel, a top panel **116**, a  
28 left panel **118**, a right panel **120** and a first end panel **122** containing a screen door section  
29 **124**. In addition, the carrier contains a folding handle **126** which rests within recess **128**.

1 Also shown about the carrier 110 are air holes 130. As shown in FIG. 9, the first end  
2 panel 122 is hingedly attached to vertical side panel 113 so that end panel 122 can be  
3 readily made to collapse inwardly into carrier 110. In a similar manner, carrier 110 also  
4 preferably contains a second end panel (not shown) at the rear of the carrier that is also  
5 hingedly attached to the vertical side panel 113 so that it too can be made to collapse  
6 inwardly into the carrier 110 when the carrier 110 is not in use.

7 With attention directed at both FIGS. 9 and 10, the tray 114 is shown to have a  
8 screen material 132 which screen material preferably rests on top of the tray 114. The  
9 screen material 132 therefore conveniently allows for passage of liquid into the tray but  
10 also simultaneously supports the pet above any liquid passing into tray 114, thereby  
11 providing an improved sanitary condition for the pet over extended periods of time.

12 In that regard, screen 132 is preferably constructed from a double layer of screen  
13 material. That is, screen 132 preferably contains a top layer of fine mesh/screen material  
14 to allow for both fluid passage while preventing a paw or nail of the animal from falling  
15 therethrough and becoming dangerously affixed to said mesh/screen material.  
16 Accordingly, such upper layer of mesh/screen material is preferably made close enough in  
17 opening to be comfortable for the animal to walk upon when the animal is placed within  
18 the carrier. This upper layer of fine mesh is then placed upon a lower structural grid  
19 screen which is therein designed to support the animal's weight. With respect to this  
20 preferred use of a double layer of screen material, it has been found that the top layer is  
21 preferably of mesh size or sieve size No. 400 to about 0.25 (nominal opening of 0.0038  
22 cm to 0.635 cm as noted in the "Handbook of Chemistry and Physics CRC, 58<sup>th</sup> Edition,  
23 Standard Test Sieves-Wire Cloth") and can be made from plastic or metallic type  
24 screen/mesh material. At such screen/mesh size, and as noted, the mesh will  
25 conveniently allow for passage of liquids, which of course include liquids spilled by the  
26 animal and/or liquid waste produced by the animal if forced to urinate in the carrier. The  
27 lower structural layer can then be readily fabricated from larger and heavier mesh/screen  
28 size material, such as, e.g., mesh size of greater than about 0.635 cm to, e.g., 12.7 cm,  
29 which corresponds to a nominal opening of 0.635 cm to about 12.7 cm. The lower



1 structural layer has as its purpose to support the load of the animal, while again, allowing  
2 for fluid passage.

3 Alternatively, those skilled in the art will appreciate that screen **132** can be made  
4 of a simple monolayer type screen/mesh construction, which monolayer similarly  
5 achieves the goal of allowing for fluid passage and acts to prevent a paw or nail from  
6 falling through and becoming lodged therein, which could cause injury to the animal.  
7 However, if monolayer construction is the choice, the monolayer itself must be made  
8 sufficiently strong/rigid to support the animal's weight contained therein. In that regard,  
9 it has been found suitable to use a monolayer type screen/mesh material of a mesh size for  
10 positioning on tray **114** so that tray **114** acts to collect liquid or liquid waste and  
11 simultaneously supports the animal above such captured liquids. In that regard, the mesh  
12 size can again be preferably made in the range of mesh size No. 400 to 0.25. However,  
13 this is only a preferred range, and as noted above, the selection of mesh size is done to  
14 accommodate passage of fluids and to prevent injury to the animal by preventing the  
15 animal's paw or nail from becoming trapped.

16 **FIG. 11** shows a front perspective view of the carrier **110**. As illustrated therein,  
17 the screen door section **124** is preferably hinged at **134** to the end panel **122** and also  
18 preferably contains a latch **136**. As also shown in **FIG. 11**, the tray **114** rests in the  
19 bottom panel **112**, and the folding handle is again shown at **126**.

20 Attention is next directed to **FIG. 12**, which provides a side perspective view of a  
21 preferred pet carrier design in partially collapsed configuration. As seen therein, first end  
22 panel **122** containing screen door **124** is hingedly collapsed inwardly into the pet carrier.  
23 Similarly, second end panel **138** is hingedly collapsed into the pet carrier, which  
24 collapsing first end panel **122** and second end panel **138** initiates the folding of the carrier  
25 into a substantially flat construction for ease of storage. Also, as shown in this particular  
26 preferred embodiment, end panel **138** is hingedly connected to vertical side panel **113**.

27 However, while **FIG. 12** illustrates the preferred configuration herein where the  
28 first end panel **122** and second end panel **138** are hingedly connected to the vertical side

1 panel 113, it will be appreciated that end panels 122 and 138 can simply be made so that  
2 they are releasably engaged to the pet carrier, e.g., by a mechanical attachment such as a  
3 snap-fit or wing-nuts with quick release. In that manner the end panels can be easily  
4 released/removed from the pet carrier and/or placed within the pet carrier for the purposes  
5 of shipping/storage. Furthermore, although not specifically illustrated, it is worth noting  
6 that either of the end panels 122 or 138 are preferably made with a non-frictional type  
7 locking mechanism which locks the front and rear walls as between themselves as the  
8 roof section.

9 **FIG. 13** illustrates a front perspective view of a preferred pet carrier design in  
10 partially collapsed configuration. As shown therein, the panels 118 or 120 are both  
11 hingedly connected at 140 to top panel 116. In addition, a hinged connection is shown at  
12 142 and a further hinge connection is placed at 144, which connection 144 connects the  
13 panels 118 and 120 to the bottom section 144. As shown in **FIG. 13**, such strategic  
14 placement of hinges 140, 142 and 144 allows for the panels 118 and 120 to collapse  
15 downwardly into a substantially flat collapsed configuration, as shown in **FIG. 14**. That  
16 is, with attention to **FIG. 14**, handle 126 is made to rest in a recess in the top panel 116,  
17 panels 118 and 120 are in a fully collapsed state, as well as panels 122 and 138. In this  
18 collapsed state, it can be seen that tray 114 still conveniently rests within bottom panel  
19 114. Accordingly, it can be appreciated that in the collapsed state shown in **FIG. 14**, the  
20 pet carrier design herein can be conveniently stored or transported for further use.

21 Finally, with attention again directed at **FIG. 13**, as illustrated therein, hinge  
22 connections 140, 142 and 144 are arranged such that panels 118 and 120 collapse  
23 inwardly into the carrier. That being the case, the hinge 140 is preferably hinged so that  
24 the hinge itself is positioned on the inside surface of panels 118 and 120; i.e., the hinge is  
25 inside the carrier as shown in **FIG. 13**. Hinge connection 142, as also shown in **FIG. 13**,  
26 is itself positioned on the outside surface of panels 118 and 120, and finally, hinge 144 is  
27 preferably designed so that the hinge is connected to the inside surface of panels 118 and  
28 120. Such positioning of the hinge connections 140, 142 and 144 thereby facilitate the

1 collapse of the panels **118** and **120**, downwardly, into the substantially flat configuration  
2 shown in **FIG. 14**.

3 Accordingly, in optional embodiment, the left panel **118** and right panel **120** as  
4 disclosed herein can be made to contain an upper, middle and lower sections, wherein  
5 said upper and middle sections are pivotally or hingedly attached to one another and said  
6 middle and lower section are also pivotally or hingedly attached to one another so that  
7 said upper and middle panel sections can be pivoted or hinged inwardly towards said  
8 bottom panel **112**.

9 On that note, hinges **140**, **142**, and **144**, as shown in **FIG. 13**, may comprise an  
10 add-on standard mechanical type plastic or metallic hinge construction, and can therefore  
11 be of sufficient number (running along the length of the structure) to effectuate the  
12 foldable/collapsible mechanism herein described. Alternatively, said hinges can also run  
13 the entire length of the structure, and be made of a polyolefin (polypropylene), which  
14 therefore provides living-hinge characteristics to the present invention. The living hinge  
15 can be either a non-integral feature of the panels (i.e. an add-on), or, in alternative  
16 embodiment, can be made integral to said panels, in which case the hinge would be  
17 contiguous with the outer surface of the panels **118** and **120**.

18 Optionally, tray **114** can be made to contain an absorbent pad, for purposes of  
19 soaking up any liquid spilled by the animal, or liquid waste should the animal be forced to  
20 relieve itself when contained within the carrier. In addition, as illustrated in **FIG. 14**, the  
21 tray **112** also preferably contains a recess at **146** which conveniently provides a location  
22 for the consumer to hold onto the tray and remove the tray from the carrier for any  
23 necessary cleaning.

24 With regards to the preferred materials of construction, it is to be noted herein that  
25 the pet carrier panels are themselves preferably manufactured of panels made of a plastic  
26 outer layer with a polyurethane foam core. Such construction provides excellent thermal  
27 insulation, as well as light-weight and durability for ease of transport. The plastic outer  
28 layer, as previously noted above, can then be preferably made from a polyethylene or  
29 polypropylene resin, to thereby provide a flexible film outer layer for the purposes of

1 forming the above noted hinge sections **140**, **142** and **144**. In that regard, a polypropylene  
2 film would provide the aforementioned living hinge structure while being integral to the  
3 outer plastic layer of the carrier panels.

4 With regard to yet another preferred embodiment of the present invention,  
5 attention is directed to **FIG. 15**, which again illustrates the pet carrier/portable habitat **110**  
6 which bottom panel therein **112** contains support structures **148** attached thereto. In  
7 addition, a perforated removable tray **150**, made of plastic, is shown and which is  
8 configured to rest upon support structures **148** at the bottom of the habitat **110**.  
9 Optionally, the support structures can be part of the tray **150**. In addition, the support  
10 structures **148** can be either integral with the bottom section, or a separate lift-out  
11 component.

12 As specifically shown, support structures **148** are preferably a ribbed design, of  
13 which a plurality preferably extend, as shown in **FIG. 16**, from the edge of the bottom  
14 section into the carrier and extend towards a circular recessed area **152** in the bottom  
15 section **112**. The circular recessed area **152** thereby acts as a built-in collection location  
16 for any liquid waste produced by the animal. Accordingly, within the circular recessed  
17 area **152** it will be preferable at times to include an absorbent collection pad.

18 It is also to be noted that the various structural sections of the present invention,  
19 such as bottom section **112**, as well as panels **116**, **118** and **120**, are preferably  
20 manufactured by a process of blow molding, which provides both an inner and outer wall  
21 structure (twin-wall construction) to the portable habitat herein. Such twin wall  
22 construction is best shown at **154** in **FIG. 17**, which illustrates a front sectional view of  
23 the portable habitat. In that regard, such blow molded wall construction provides a much  
24 safer environment for the pet, as any impact against the outer wall will be better absorbed  
25 in such blow molded wall construction as opposed to a single type wall configuration. In  
26 addition, such inner and outer wall construction conveniently allows for the optional use  
27 of insulating foam material, which would provide better regulation and temperature

1 control inside the portable habitat when in transit, or exposed to severe temperature  
2 fluctuations.

3 However, in the broad context of the present invention, single wall construction is  
4 certainly acceptable, and indeed preferable in those cases where a lower cost alternative  
5 design is contemplated. Furthermore, regardless of whether single wall or twin-wall  
6 construction is present, it is also preferable herein to include, on the edges of the panels  
7 **116, 118 and 120** a small overhanging section. This is best illustrated at **131** in **Fig. 12**,  
8 which then serves to position and secure the end panels **122** and **138** as they are moved  
9 into full open position.

10 Also shown in **FIG. 17** is the folding handle **126**, and hinges **140, 142 and 144**,  
11 which as previously noted, can assume either a mechanical or living-type membrane  
12 hinge configuration. For example, in a particular preferred design, hinges **140 and 142**  
13 are both of the living type or membrane hinge type variety, and hinge **144** can be a  
14 mechanical or piano type hinge design. Also better illustrated in **FIG. 17** is the feature  
15 that the bottom section **112** contains a downwardly sloping surface **156** which again  
16 facilitates the flow of waste fluid toward the circular recessed area **152** which as  
17 illustrated in **FIG. 17** to contain an absorbent pad. Finally, the removable tray **150** is  
18 shown in cross-section along with the general location of the ribbed supports **148**.

19 Attention is next directed to **FIG. 18**, which is yet another front sectional view of  
20 the portable habitat, illustrating the use of a preferred metallic/chrome wire door **158**. In  
21 addition, as further illustrated in **FIG. 18**, the door **158** contains a spring loaded pin  
22 release **160** along with pins at **162 and 164**, thereby releasably engaging door **158** to the  
23 portable habitat structure at either a left or right location. With attention directed at **FIG.**  
24 **19**, a more detailed sectional view is provided of the pins **162 and 164**. It is therefore  
25 worth noting that by making the door **158** entirely releasable from the habitat, different  
26 doors can be employed which are more suitable for the particular animal at issue. For  
27 example, in the case of a bird, a small perch can be fitted to the door structure. In

1 addition, as noted, the door **158** can be made to open and hinge either in a left or right  
2 direction.

3 Attention is also directed to **FIG. 20**, which illustrates the optional use of food  
4 and water dispensers **166** and **168** in the door **158**. In accordance with the present  
5 invention, as the animal can relieve itself without itself having to remain in contact with  
6 its liquid waste, the pet owner can more humanely provide the animal with liquid  
7 nourishment during prolonged travel periods. Finally, attention is also directed to **FIG.**  
8 **21**, which provides a side sectional view of the portable habitat herein. As best shown in  
9 **FIG. 13**, a space is provided at **170** for accommodating the front door **158** when in  
10 collapsed configuration. In addition, illustrated end panel **138** which contains holes **172**  
11 is itself hinged at **174** for collapsing into the pet habitat.

12 Alternatively, it should again be appreciated that end panels **122** and **138**, while  
13 preferably hingedly connected to the portable habitat for folding therein, may optionally  
14 be fully releasable for both removal and/or placement within the habitat during shipping  
15 and storage.

16 **FIG. 22** illustrates the present invention, in preferred embodiment as a collapsible  
17 cooler **210** which contains a generally horizontally disposed bottom panel **212** and a  
18 vertically disposed side section **224**. As illustrated, vertical disposed side section **224** is  
19 adjacent to bottom panel **212** and can be integral thereto. The cooler **210** also contains  
20 top panel **214**, and side panels **216** and **218**. Side panels **216** and **218** contain an upper  
21 **220**, middle **222**, and vertically disposed side section **224**. The cooler **210** further  
22 contains a door or removable section **226** in the top panel **214**. Door **226** is attached to  
23 top panel **214** by means of pivot **234**, such that door **226** can pivot upward, and therein  
24 allow access to the interior of the cooler **210** for the purpose of placing items within  
25 cooler **210**, or for removing items therefrom.

26 As illustrated in **FIG. 23**, cooler **210** also contains two end panels **226** and **228**.  
27 The two end panels **226** and **228** are preferably pivotally attached at **232** to vertical  
28 section **224**, and not to horizontal bottom panel **212**. In such manner, end panel **226** can

1 readily pivot inwardly to rest upon bottom panel 212, and end panel 228 can pivot  
2 inwardly at 230 to rest upon end panel 226. It is preferred that pivots 230 and 232 are  
3 disposed on the outer edge surface of the end panels 226 and 228 to better facilitate the  
4 inward collapse of the end panels 226 and 228. With reference to FIG. 23, pivot  
5 locations 230 and 232 are shown without lower section 224. In other words, lower  
6 section 224, is not shown FIG. 23, so that the location of pivots 230 and 232 can be  
7 better illustrated.

8 The pivoting action at 230 and 232 is preferably provided for by a mating  
9 protrusion/receptacle on the edge of the front 226 or rear panel 228 and the adjacent  
10 region of the vertically disposed side section 224. The protrusion/receptacle may  
11 comprise a stud fitted into orifices of both the front/rear panels and the vertically disposed  
12 side section 224, a protrusion and a mating indentation, etc. In all cases, it is possible to  
13 form each half of the pivot integral with the respective panel.

14 Those skilled in the art, however, will also recognize that it may in addition be  
15 preferable to modify such pivotal/hinge attachment location to facilitate the resting of end  
16 panel 226 on top of end panel 228 when in collapsed state. Furthermore, those skilled in  
17 the art will appreciate that end panels 226 and 228 may not necessarily be pivotally  
18 attached at any location, and may be designed such that they are configured to be  
19 completely removed and separately stored. This would optionally be the case, e.g., in  
20 those situations wherein the invention herein is applied as a simple collapsible structure  
21 for the storage of consumer waste containers, although other applications are clearly  
22 possible. In such optional embodiment, end panels 226 and 228 would be assembled in  
23 such fashion to pressure fit within the collapsible structure herein. That is, the end panels  
24 226 and 228 can be readily assembled such that they are releasably engaged to the  
25 collapsible structure by a simple press or interference fit.

26 As illustrated in FIG. 24, once end panels 226 and 228 have pivoted inwardly,  
27 such that they can assume a horizontal posture atop of bottom panel 212, side panels 216  
28 and 218 can pivot inward. The upper and middle sections 220 and 222 of side panels 216

1 and 218 are hingedly connected to one another about pivot 238. It is preferred that pivot  
2 238 is disposed on the exterior surface of side panel 216 and 218 to better allow the upper  
3 and middle section 220 and 222 to fold inward so as to assume a horizontal posture  
4 wherein the exterior surfaces of the upper and middle sections 220 and 222 rest on one  
5 another. In addition, pivot 238 is preferably a living hinge, extending along the length of  
6 the cooler thereof. In such regard, those skilled in the art will appreciate that such living  
7 hinge would not only provide hinge type function, but would simultaneously provide a  
8 seal thereof, such that liquid contained within the cooler would not leak to the outside.  
9 Such living hinge is preferably made from polypropylene type material, and more  
10 broadly, polyolefin type polymer material, or flexible type polyolefin material, such as  
11 polyethylene/polypropylene copolymers, and/or polyethylene type copolymers containing  
12 comonomers of the alpha-olefin variety (e.g. 1-butene, 1-pentene, etc). Along such lines,  
13 those resins now commonly known as "single-site" or "metallocene" based polyolefines,  
14 which provide a polyethylene copolymer of controlled comonomer composition  
15 distribution, and narrow molecular weight distribution, are contemplated.

16 Upper section 220 is also further connected to the top panel 214 at pivot 236.  
17 Pivot 236 is preferably disposed on the interior surface of side wall 216 and 218 to  
18 facilitate the collapse of side panel 216 and 218 by way of top section 220 folding inward.  
19 Again, and in a manner similar to the above, pivot 236 is preferably of the integral hinge  
20 variety, and made from the indicated preferred materials.

21 Additionally, middle section 222 is connected to lower section 224 at pivot 240.  
22 Pivot 240 is preferably disposed on the interior surface of side panels 216 and 218 to  
23 better allow middle section 222 to pivot inward. Also, and in a manner consistent with  
24 the above, pivot 240 is preferably of the living hinge variety, and made from the preferred  
25 indicated materials.

26 With the hinges so placed, side panels 216 and 218 can collapse inward, wherein  
27 middle section 222 folds inward and downward towards bottom panel 212, and upper



1 section 220 pivots inward and towards top panel 214, and therein drawing pivot 238  
2 inward toward the center of cooler 210.

3 FIG. 25 illustrates the present invention in a fully collapsed condition. This  
4 figure shows that the collapsing action described above of side panels 216 and 218 results  
5 in the vertical collapse of top panel 214, such that when the cooler 210 is fully collapsed,  
6 as illustrated in FIG. 25, top panel 214 comes to rest on folded upper section 220 which  
7 rests upon middle section 222. Furthermore, in that situation wherein end panels 226 and  
8 228 are made to pivotally attach to the device, and are not completely removed, end  
9 panels 226 and 228 come to rest on bottom panel 212, wherein end panels 226 and 228  
10 are further longitudinally contained by vertically disposed section 224.

11 In accordance with the intended end use of the present invention 210 as a cooler  
12 or ice chest, all panels should be preferably constructed of thermal insulating materials.  
13 Such materials include expanded type twin-wall construction polymer materials,  
14 preferably foam materials, optionally containing a film type (integral hinge) surface, as  
15 noted above, made via the process of blow molding. However, in the broad context of  
16 the present invention, single wall construction, of non-metallic material, such as injection  
17 molded plastic, is an option, and provides all of the advantages of collapsibility  
18 previously noted.

19 Suitable foam materials, as noted, would include, but not be limited to, foamed  
20 polystyrene, polyurea/urethane, polyurea, trimer foam, etc. In addition, in preferred  
21 embodiment, it can be appreciated that in order to increase the durability and structural  
22 integrity of the cooler the insulating material of the panels should, preferably, be coated  
23 with a material to effect such an increase in durability and strength. Accordingly,  
24 exterior, and preferably also interior surfaces of the panels, may be coated with a plastic  
25 sheeting material, including, but not limited to polyolefins, vinyl polymers, styrene based  
26 polymers, acrylonitrile-butadiene-styrene resins, vinyl polymer resins, engineering  
27 thermoplastics, and thermoset type resins or coatings.

28 Integrating a cooler's need for durability and strength, with the need for thermal  
29 insulation is preferably satisfied herein via the process of blow molding, wherein the

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1 exterior of the panel is made from a polymeric material, thereby providing strength and  
2 durability, and the air void between the skins of the panel would provide thermal  
3 insulation. Similarly, hollow panels made using a thermoforming process would also be  
4 suitable. Additionally, to further improve the thermal insulating properties of hollow  
5 panels, insulating material, for example foam, as herein noted, may be incorporated  
6 between the opposing skins which form the panel in, e.g., a downstream operation. The  
7 aforementioned techniques for forming panels of suitable durability, strength, and thermal  
8 insulating character is put forth only as a non-exhaustive list of possibilities. Those  
9 skilled in the art are aware that there are a large variety of techniques and materials which  
10 may be used to obtain panels and insulation of the above construction suitable for the  
11 manufacture of the present invention.

12 In that regard, it is also worth noting that when foam material is employed directly  
13 in the present invention, such as a structural foam, it has also been found preferable to  
14 include, on the outer layer of the foam, a protective film layer that prevents damage to the  
15 foam layer, and also provides a better or improved cosmetic appearance. The film layer  
16 can be made to assume an appearance which is cosmetically pleasing to the consumer. In  
17 that regard, a particularly preferred embodiment centers on the use of expanded  
18 polystyrene foam for the cooler **210**, and an outer film layer, also of a polystyrene resin.

19 In addition to providing protection for a inner foam layer, and providing improved  
20 aesthetic appeal, an outer film material, whether a coating on a foam or a coating on the  
21 skins of a thermoformed or blow molded part, as previously discussed, can conveniently  
22 serve as an integral type hinge material. For example, pivots **230**, **232**, **234**, **236**, **238**, and  
23 **240**, as shown is **FIG. 22-24** can all comprise a mechanical standard type hinge  
24 construction, to effectuate the foldable/collapsible mechanism herein described. In such  
25 regard, e.g., pivot **236**, **238** and/or **240** may preferably comprise one or a plurality of  
26 mechanical type hinges, along the length of the cooler **210**.

27 Alternatively, and again as noted, said pivots can also run substantially along the  
28 length of the structure, which therefore provides a living-hinge characteristic to the  
29 present invention. Again, the living hinge can be either a non-integral feature, or,

1 alternatively, can be integral to said structural components as illustrated in the drawings.  
2 When living hinges of the described nature are used the additional benefit of having a  
3 waterproof seam is readily provided.

4 Although this invention has been disclosed and illustrated with reference to  
5 particular embodiments, the principles involved are susceptible for use in numerous other  
6 embodiments which will be apparent to persons of ordinary skill in the art. The invention  
7 is, therefore, to be limited only as indicated by the scope of the appended claims:

1 What is claimed is:

2 1. A collapsible/foldable structure comprising:

3 a top roof (28, 30) and a bottom platform 26 defining a top and bottom of said  
4 structure, including a vertically disposed lower side section 20 on said bottom platform;

5 front 29 and rear 34 collapsible walls each pivotally attached to said vertically  
6 disposed side section 20 to provide for pivotable collapse of said front and rear walls;

7 said front wall having an opening for egress and ingress of an animal;

8 a pair of sidewalls (12, 14) each pivotally attached to said roof to facilitate inward  
9 collapse of said sidewalls when said sidewalls are pivoted toward said bottom platform,  
10 said sidewalls defined by an upper 16 and middle section 18 including said lower  
11 vertically disposed side section 20, wherein said upper and middle sections are pivotally  
12 attached to one another and said middle and lower section are pivotally attached to one  
13 another so that said upper and middle sidewall sections can be pivoted inwardly towards  
14 said bottom platform;

15 and wherein said top roof further comprises two roof sections (28, 30) pivotally  
16 attached to one another so that said two roof sections can collapse downwardly along said  
17 pivotable attachment toward said bottom platform;

18 said sidewalls containing an outer and inner surface thereof, and wherein said  
19 upper and middle sidewalls are pivotally attached by a continuous outer surface of said  
20 sidewalls.

21 2. The structure of claim 1 wherein said top roof (28, 30), bottom platform  
22 26, vertically disposed side section 20, pair of sidewalls and said front and rear walls are  
23 made from a thermally insulating polymeric material, polymeric foam material, expanded  
24 polystyrene foam, polyurethane foam, or structural foam material.

25 3. The structure of claim 1 wherein said sidewalls (12, 14) pivotally attached  
26 to said roof, are pivotally attached substantially along a length of said sidewalls, and said  
27 pivotal attachment comprises a living hinge.

1           4.     The structure of claim 1 wherein said upper and middle sections pivotally  
2 attached to one another, are pivotally attached substantially along a length of said  
3 sidewalls, and said pivotal attachment comprises a living hinge.

4           5.     The structure of claim 1 wherein said middle and lower sections that are  
5 pivotally attached to one another are pivotally attached substantially along a length of said  
6 sidewalls, and said pivotal attachment comprises a living hinge.

7           6.     A collapsible/foldable structure comprising:  
8           a top roof (28, 30) and a bottom platform 26 defining a top and bottom of said  
9 structure including a vertically disposed lower side section 20 on said bottom platform;  
10           front and rear walls, said front wall having an opening for egress and ingress of an  
11 animal;

12           a pair of sidewalls (12, 14) each pivotally attached to said roof to facilitate inward  
13 collapse of said sidewalls when said sidewalls are pivoted toward said bottom platform,  
14 said sidewalls defined by an upper and middle section including said lower vertically  
15 disposed side section, wherein said upper and middle sections are pivotally attached to  
16 one another and said middle and lower sections are pivotally attached to one another so  
17 that said upper and middle sidewall sections can be pivoted inwardly towards said bottom  
18 platform;

19           wherein at least one of said pivotal attachments of said sidewalls is a living hinge  
20 substantially along the length of said sidewall.

21           7.     The structure of claim 6 wherein said front and rear walls are pivotally  
22 attached to said vertically disposed side section.

23           8.     A collapsible/foldable structure comprising:  
24           a substantially planar top roof and a bottom platform defining a top and a bottom  
25 of said structure;

26           a pair of sidewalls each pivotally attached to said roof to facilitate inward collapse  
27 of said sidewalls when said sidewalls are pivoted toward said bottom platform, said  
28 sidewalls further containing an upper and lower section, wherein said upper and lower  
29 sections are pivotally attached to one another so that said upper and lower sections can be

1 pivoted inwardly towards said bottom platform, wherein at least one of said pivotal  
2 attachments is a living hinge substantially along the length of the sidewall.

3 9. A foldable/collapsible structure for storing perishable goods comprising:  
4 a horizontally disposed bottom panel **212** and a vertically disposed side section  
5 **224**, a top panel **214**, a pair of side panels (**216**, **218**) defined by upper **220** and middle  
6 side sections **222** including said vertically disposed side section **224**;

7 first **226** and second **228** end panels;

8 said first end panel and second end panel hingedly attached to said vertically  
9 disposed side section **224** to provide for pivotal collapse of said first and second end  
10 panel;

11 wherein said upper side section **220** is hingedly connected to said top panel **214**  
12 and said middle side section **222**, said middle section is hingedly connected to said  
13 vertically disposed side section **224**, wherein said side panels can be pivoted inwardly  
14 towards said bottom panel.

15 10. The foldable/collapsible structure of claim 9 wherein at least one of said  
16 pivotal attachments of said side panels (**216**, **218**) is a waterproof living hinge  
17 substantially along the length of said side panel.

18 11. A collapsible/foldable structure comprising:

19 a top roof (**28**, **30**) and a bottom platform **26** defining a top and bottom of said  
20 structure, including a vertically disposed lower side section **20** on said bottom platform;

21 front **29** and rear **30** collapsible walls each movably attached to said vertically  
22 disposed side section **20** to provide for movement of said front and rear walls;

23 said front wall having an opening for egress and ingress of an animal;

24 a pair of sidewalls (**12**, **14**) each pivotally attached to said roof to facilitate inward  
25 collapse of said sidewalls when said sidewalls are pivoted toward said bottom platform,  
26 said sidewalls further containing upper **16** and middle section **18**, wherein said upper and  
27 middle sections are pivotally attached to one another so that said upper and middle  
28 sidewall sections can be pivoted inwardly towards said bottom platform;

1 and wherein said top roof further comprises a roof section pivotally attached to the  
2 upper sidewall sections, so that said roof section can collapse downwardly along said  
3 pivotable attachment toward said bottom platform;

4 said sidewalls having an outer and an inner surface thereof, and the middle wall  
5 section being pivotally attached to the vertically disposed lower side section **20** along an  
6 inner edge of the middle wall section to permit folding of said middle sidewall inwardly  
7 toward said base, the upper wall section being pivotally attached to said middle wall  
8 section at the outer edge thereof to permit said upper wall section to collapse into contact  
9 with the outer surface of said lower wall section, and said roof section being pivotally  
10 connected to said two upper sidewall sections along the inner edges thereof to permit said  
11 top to be collapsed into contact with the inner surface of said upper wall sections.  
12





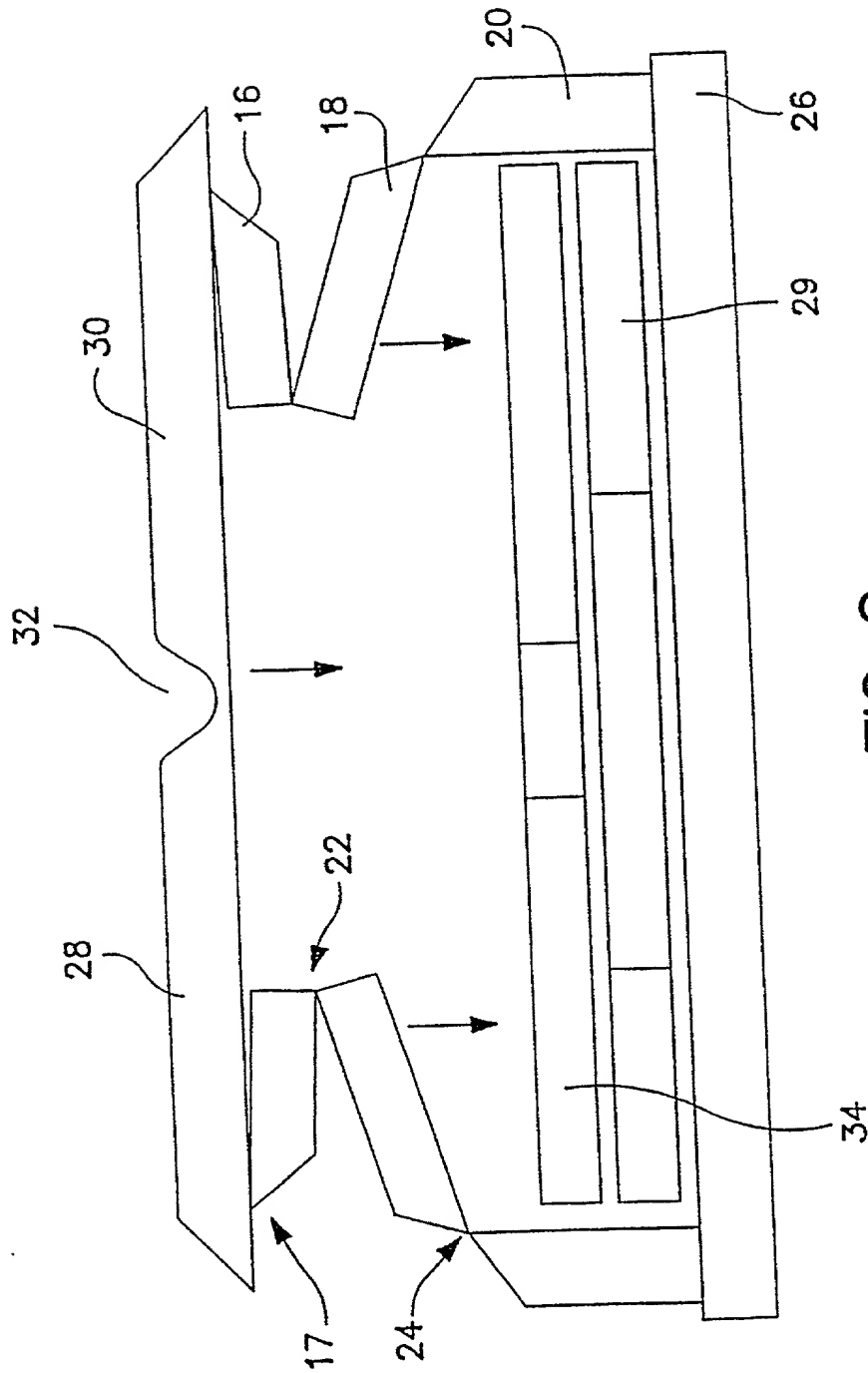


FIG. 2

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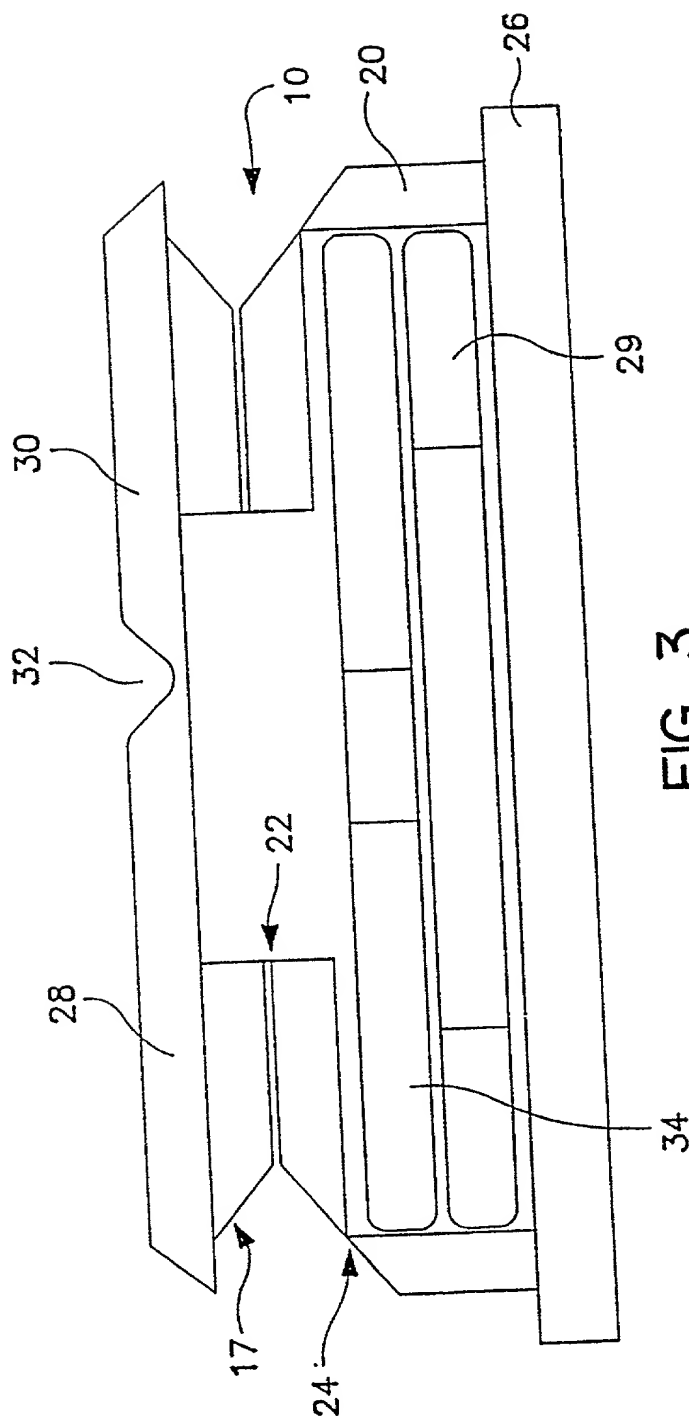


FIG. 3

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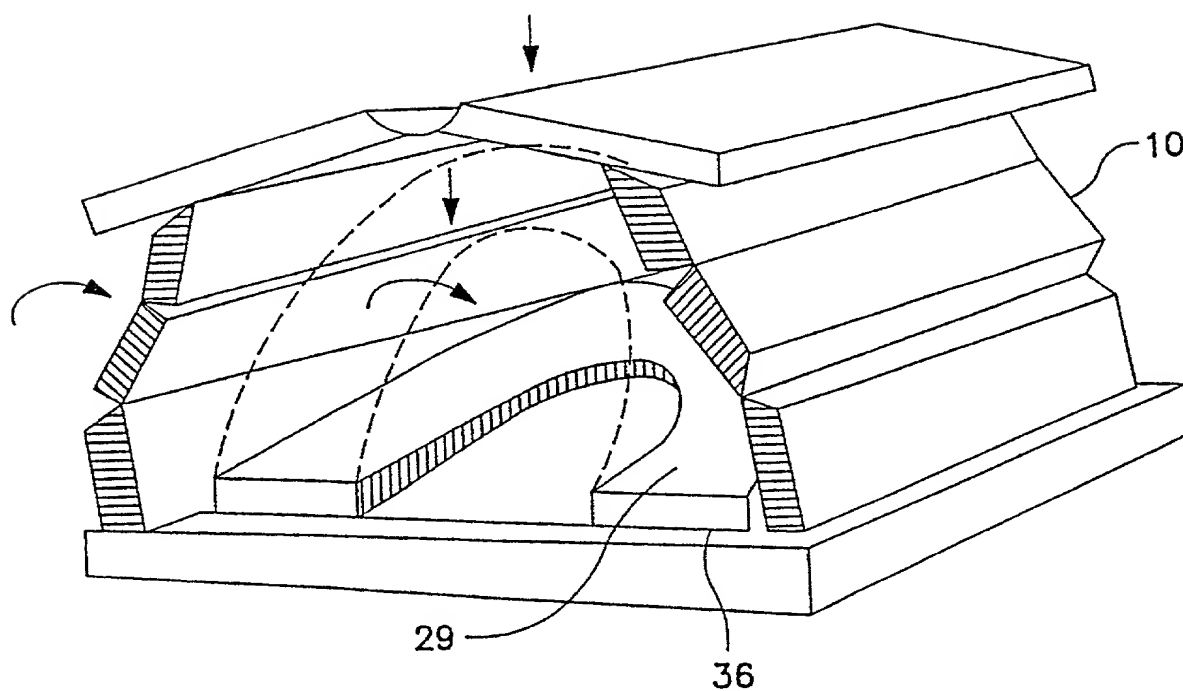


FIG. 4

5/16

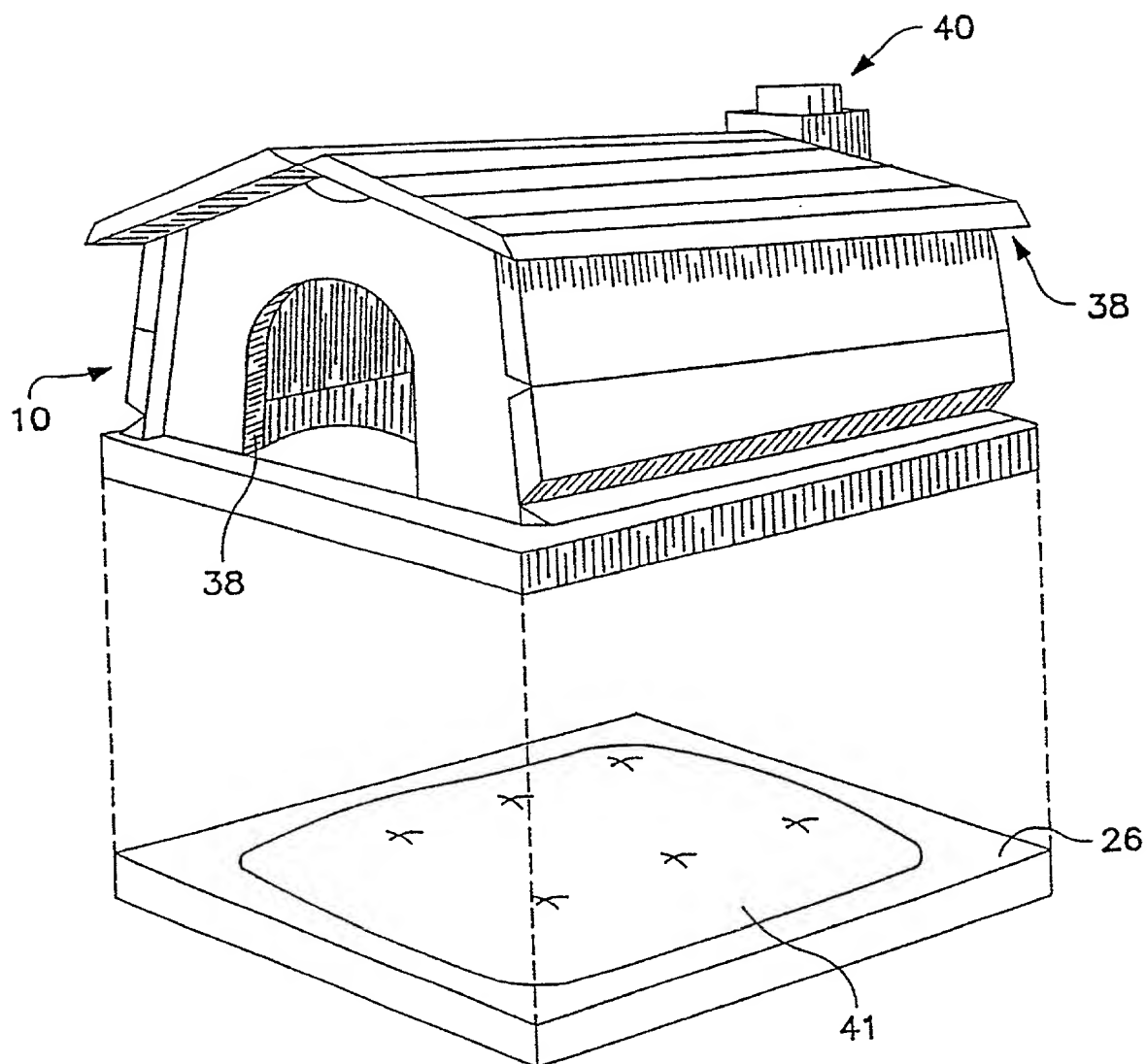


FIG. 5

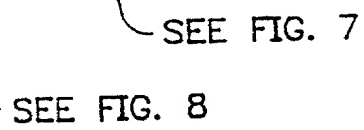


FIG. 8

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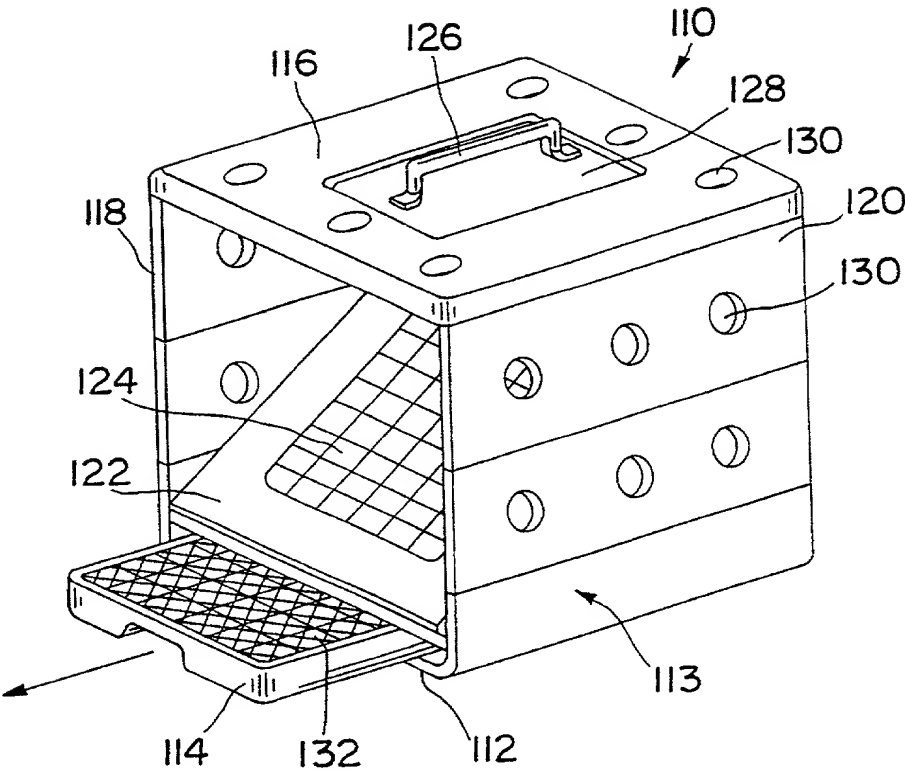


FIG. 9

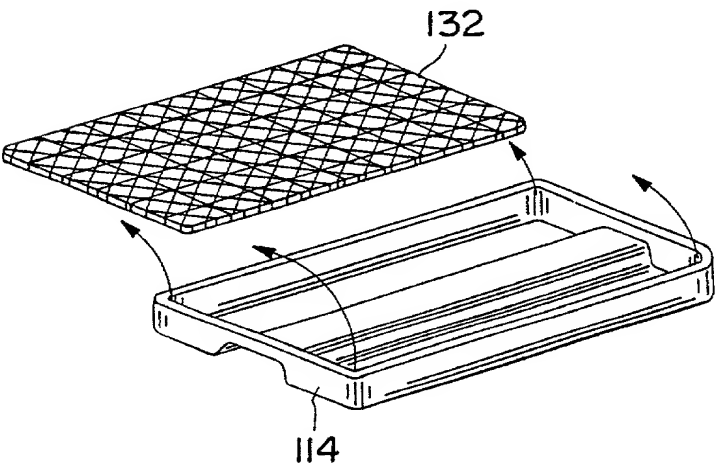


FIG. 10

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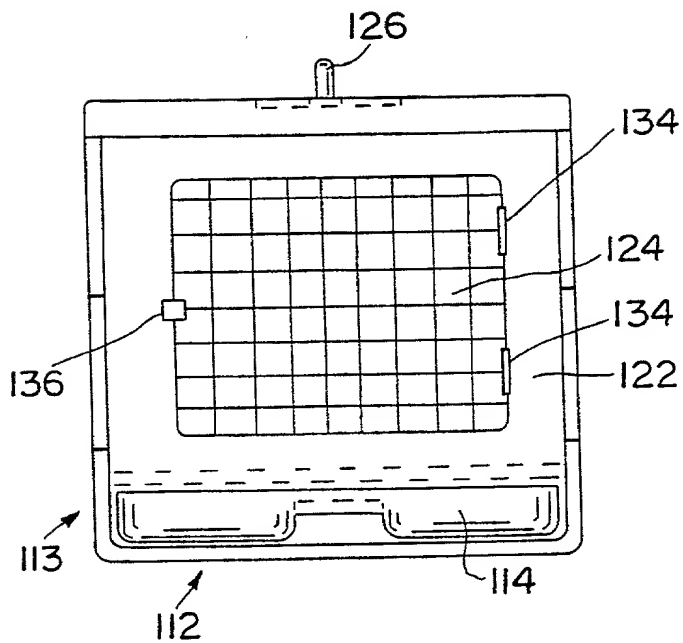


FIG. 11

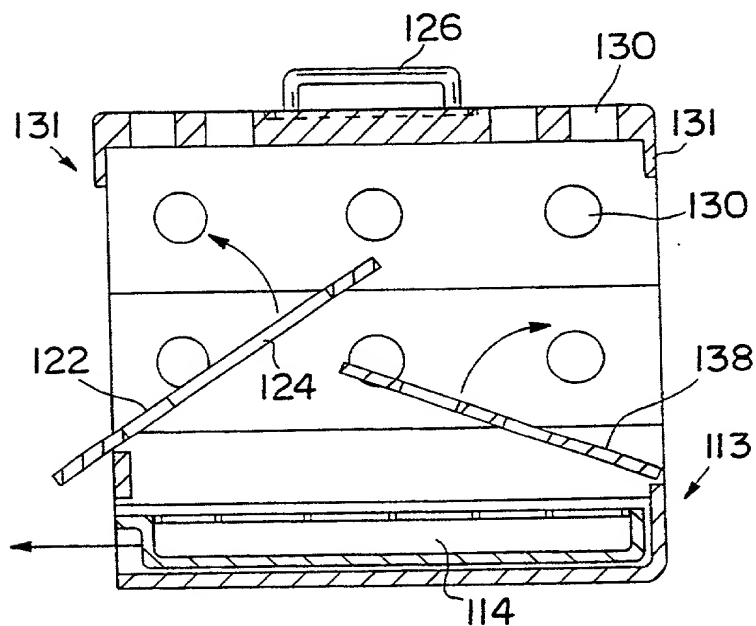


FIG. 12

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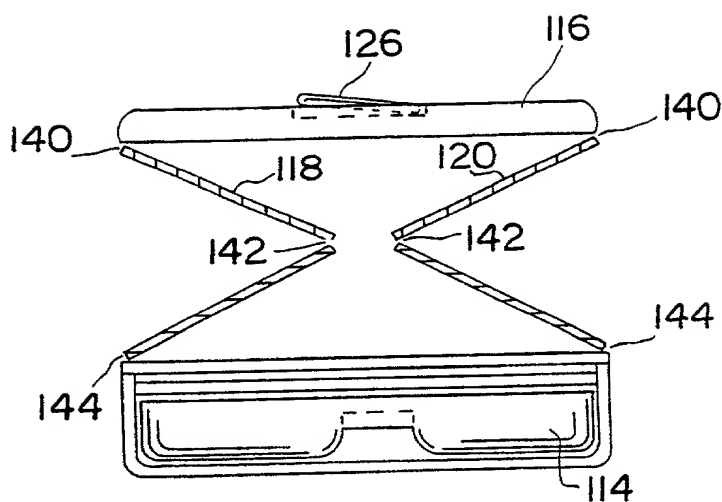


FIG. 13

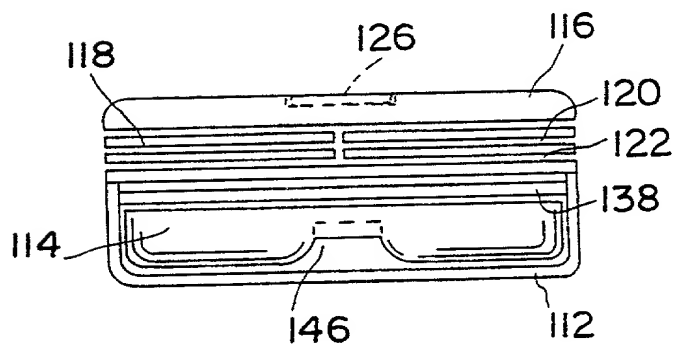


FIG. 14



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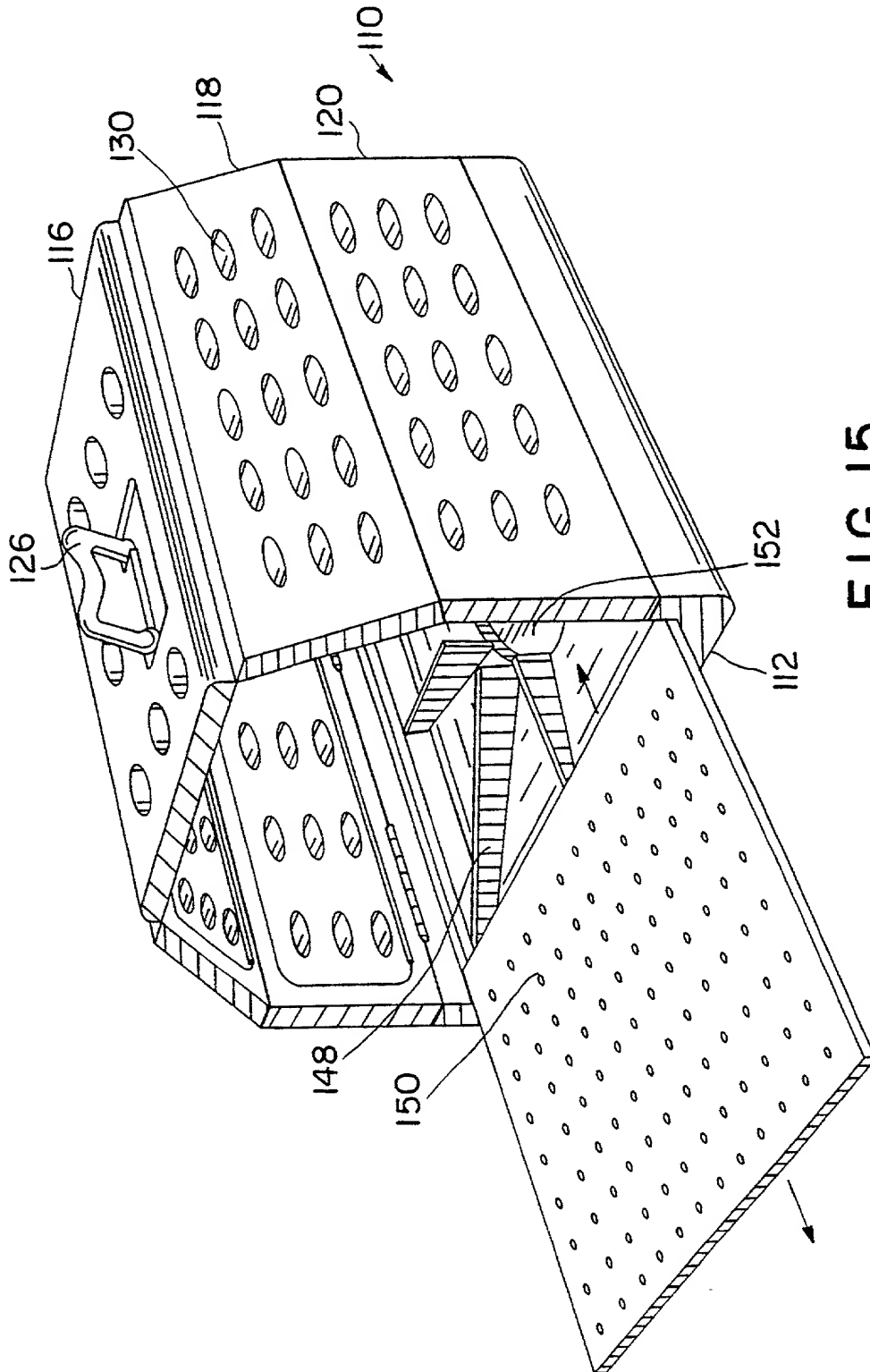


FIG. 15

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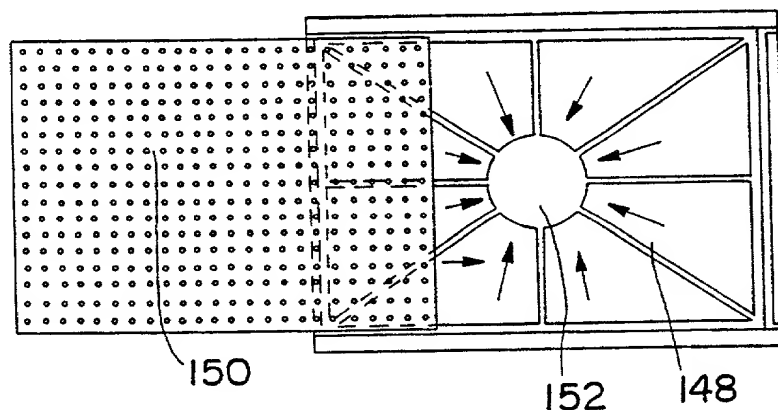


FIG. 16

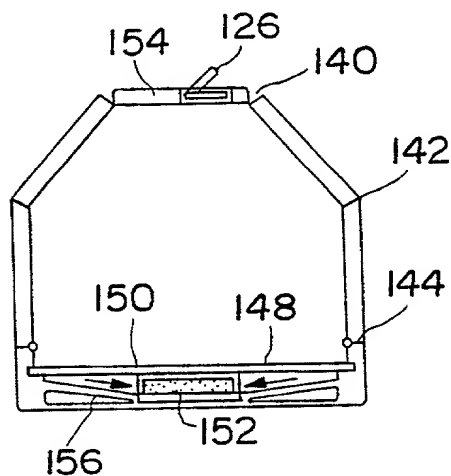


FIG. 17

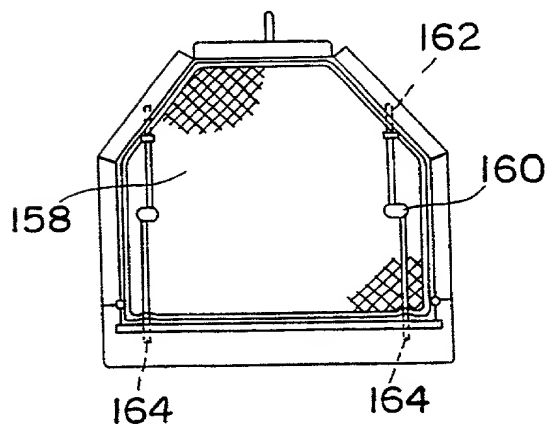


FIG. 18

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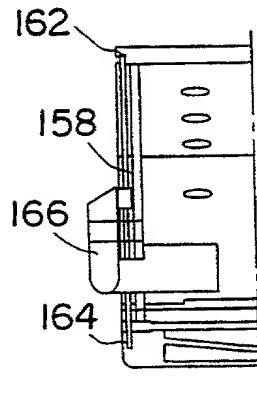


FIG. 19

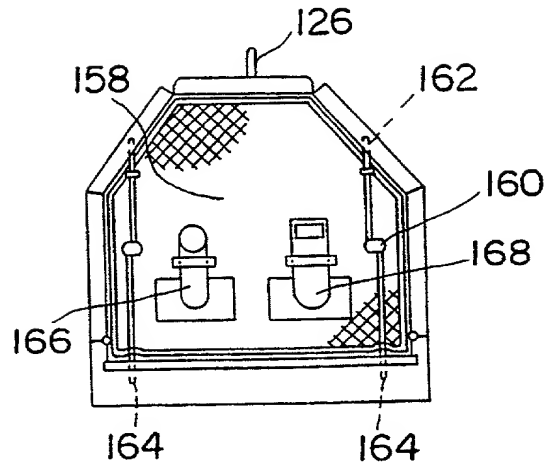


FIG. 20

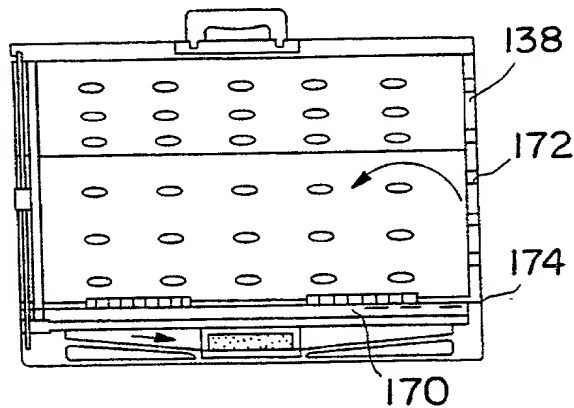
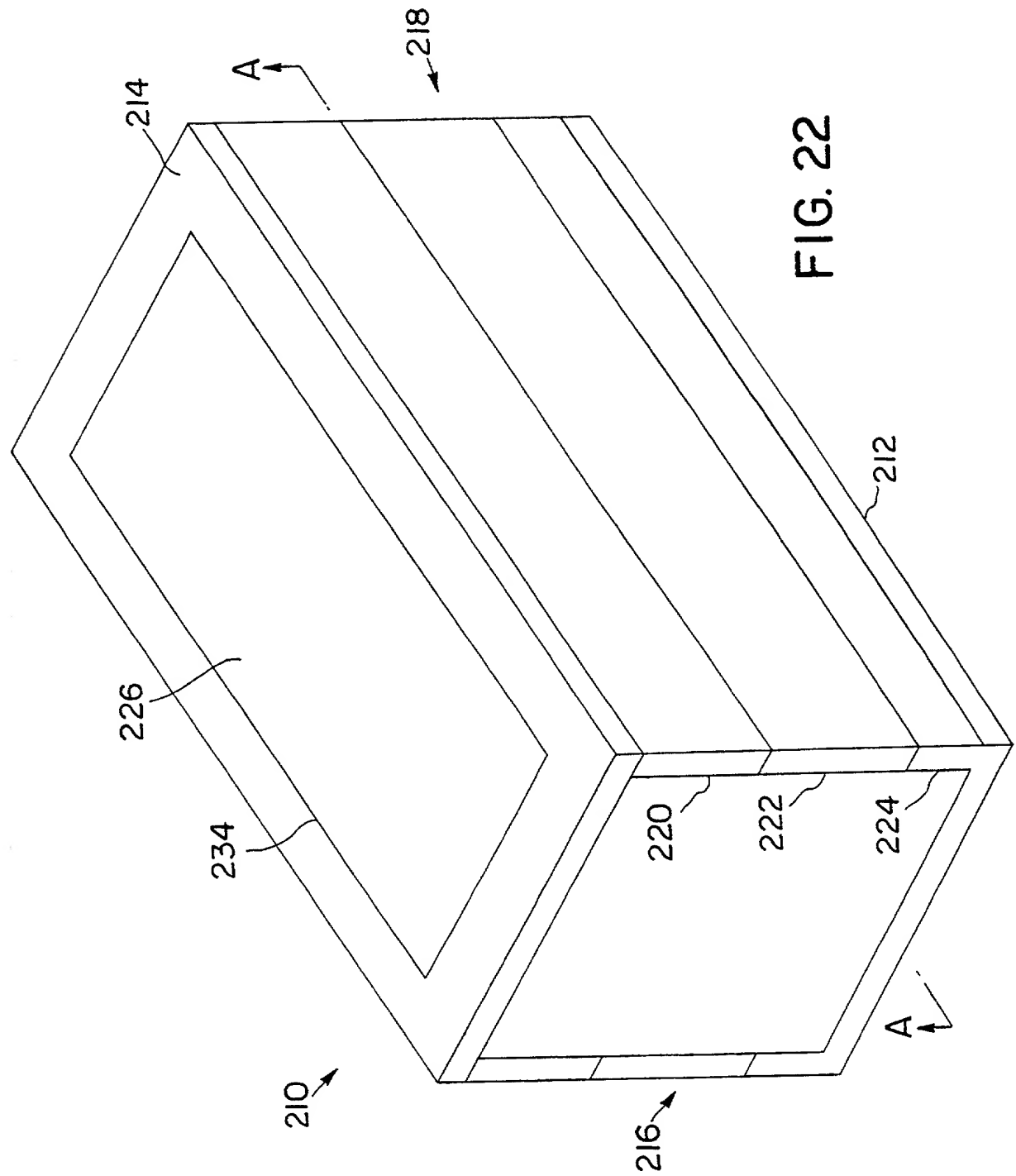


FIG. 21



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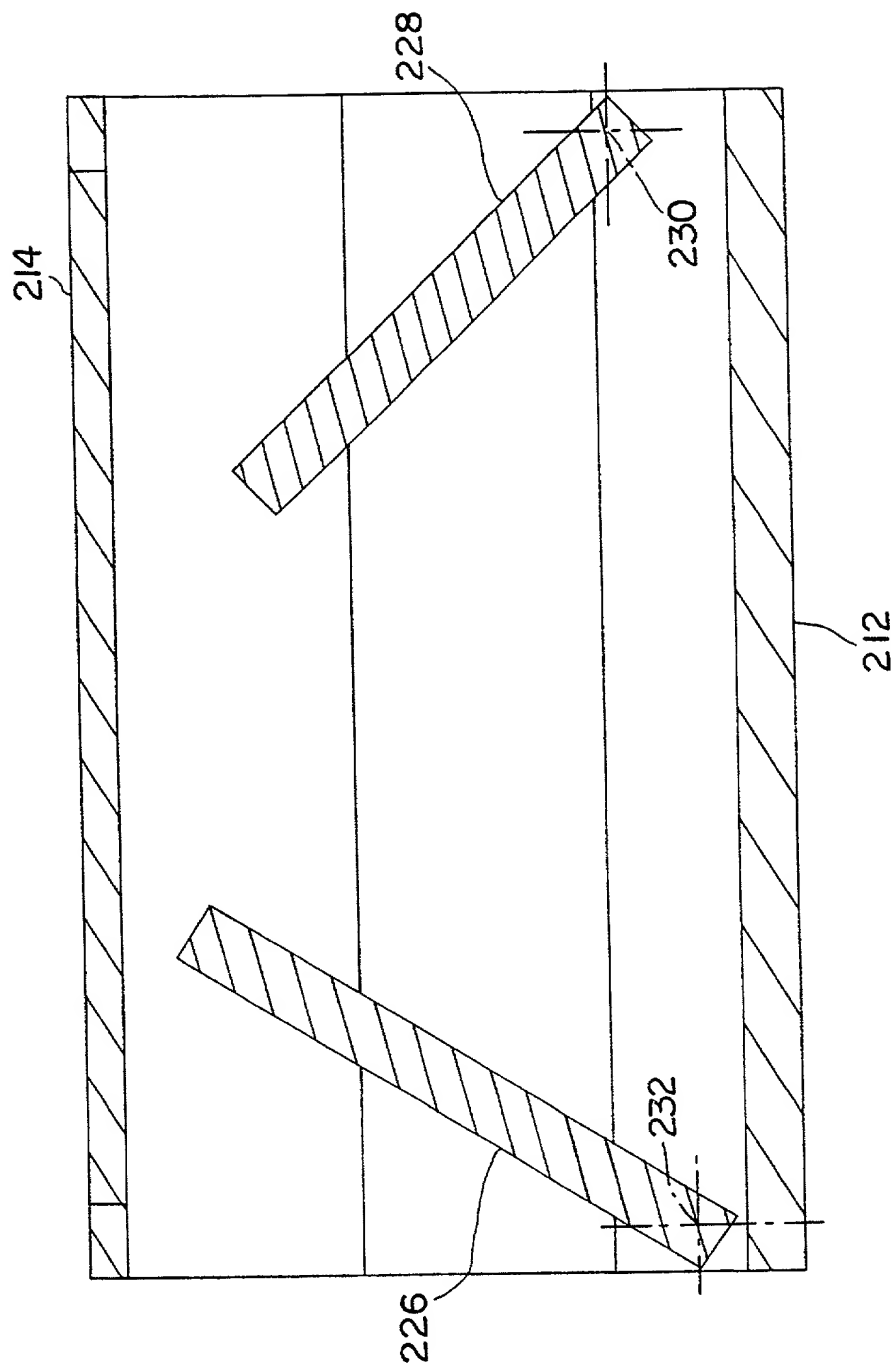
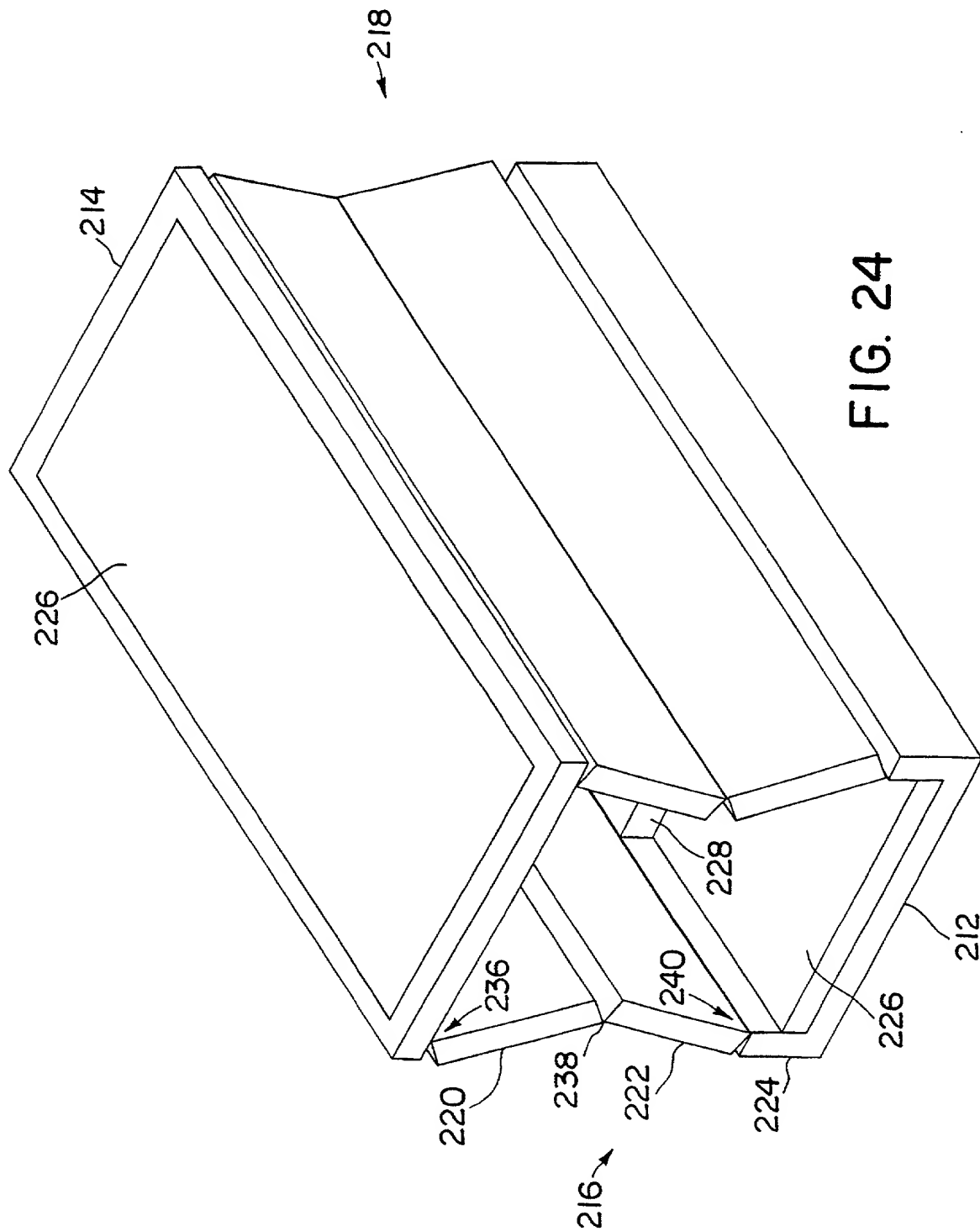


FIG. 23





Docket No.

TFH 99.03

# Declaration and Power of Attorney For Patent Application

## English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled  
**FOLDABLE/COLLAPSIBLE STRUCTURES**

the specification of which

(check one)

☒ is attached hereto.

☐ was filed on \_\_\_\_\_ as United States Application No. or PCT International  
Application Number \_\_\_\_\_  
and was amended on \_\_\_\_\_  
(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Priority Not Claimed

(Number)

(Country)

(Day/Month/Year Filed)

☐

(Number)

(Country)

(Day/Month/Year Filed)

☐

(Number)

(Country)

(Day/Month/Year Filed)

☐



I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

_____ (Application Serial No.)	_____ (Filing Date)
_____ (Application Serial No.)	_____ (Filing Date)
_____ (Application Serial No.)	_____ (Filing Date)

I hereby claim the benefit under 35 U. S. C. Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. Section 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, C. F. R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

09/255,117 _____ (Application Serial No.)	22 February 1999 _____ (Filing Date)	Patented _____ (Status) (patented, pending, abandoned)
09/266,389 _____ (Application Serial No.)	11 March 1999 _____ (Filing Date)	Abandoned _____ (Status) (patented, pending, abandoned)
09/334,529 _____ (Application Serial No.)	16 June 1999 _____ (Filing Date)	Patented _____ (Status) (patented, pending, abandoned)

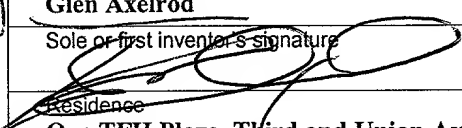
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

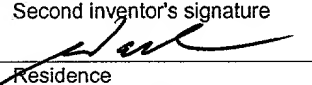
POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

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